



EconExpert - for WIND Model

For the Economic Evaluation and Valuation of Wind Power Projects that Sell Energy to the Power Grid

User's Manual

Published – April 2011

Competitive Energy Insight, Inc.

12025 Blue Diamond Court
San Diego, CA 92131

858 - 566 – 0221 (T)

858 - 566 – 0287 (F)

info@CEInsight.com

www.CEInsight.com

Notices

Copyright Notice

The **EconExpert-WIND™ Financial model** and its accompanying documentation are protected by copyright law and international treaties. The EconExpert-WIND model, documentation, and reports generated by the model include prominently displayed Copyright Notices. Unauthorized use, modification, reverse engineering, reproduction or distribution of the EconExpert-WIND model, or any portion of it, may result in severe civil and criminal penalties and will be prosecuted to the maximum extent possible under the law.

If you are a licensed user, you are free to distribute printed reports and charts, as well as to provide others with electronic copies of EconExpert-WIND if such reports or electronic copies are generated by the EconExpert-WIND model's Command Menu and contain the Copyright Notices included with the EconExpert-WIND model. You may also provide saved electronic copies of the EconExpert-WIND model to others but such copies will not function properly on unlicensed computers unless the Authorized License Codes are provided by Competitive Energy Insight, Inc.

Changing Your Computer's Clock

If you make changes to the setting of the clock on your computer, particularly if you set the clock backwards after you have installed EconExpert-WIND or forwards beyond the end of your authorized license period, an error will be produced when the EconExpert-WIND model is opened. While Excel can be closed and reopened normally, EconExpert-WIND will not function properly if it is reopened after such invalid clock settings have been made. If you encounter a problem related to the setting of your computer clock as it relates to EconExpert-WIND, please contact CEI to discuss measures to repair your valid installation of the model.

Use of EconExpert-WIND with Macros Enabled

In order to properly install and use EconExpert-WIND, the *Macros Enabled* option for Microsoft Excel MUST be selected. The model will not function properly without Macros Enabled.

Microsoft Excel Versions 2002 and later include a Security Setting that can prevent the user from opening spreadsheets that contain macros. If this Security Setting is set to HIGH, then you will not be permitted to open EconExpert-WIND (or any other spreadsheet) with the Macros functioning. Prior to opening EconExpert-WIND, you may want to check this setting on your version of Excel and Windows. Specific settings for Windows Vista, Windows 2007 and later may also be required for installation of EconExpert on your computer. Please contact CEI regarding these settings.

Product Warranty and Warranty Limitations

Users of EconExpert-WIND hereby indemnify Competitive Energy Insight, Inc. against any and all problems, damages, liabilities or claims, or other violation that might arise in association with any use of the EconExpert-WIND model by the Licensee. Competitive Energy Insight, Inc. makes no warranties or

representations with respect to the accuracy or fitness-for-purpose with respect to the use or application of the model except that Competitive Energy Insight will make reasonable efforts to correct defects in the model after they are identified and will promptly provide paid Licensees with updates containing such corrections when they are available. These reasonable efforts to correct defects in the model do not apply to Derivative Works developed by Users of the model. CEI assumes no responsibility for or obligation relative to the performance of or defects in Microsoft Excel.

EXCEPT FOR THE WARRANTIES AND REPRESENTATIONS EXPRESSLY SET FORTH HEREIN, COMPETITIVE ENERGY INSIGHT, INC. DISCLAIMS ANY AND ALL WARRANTIES AND REPRESENTATIONS, EXPRESS OR IMPLIED, WITH RESPECT TO THE MODEL AND ITS CONFORMITY TO ANY SPECIFICATIONS OR DESCRIPTION, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR THAT THE MODEL OR THE RESULTS THEREFROM SHALL BE ERROR FREE.

Removal of the EconExpert-WIND Menu

Under rare circumstances, the EconExpert-WIND Command Menu may not be fully removed when the model is closed. If this occurs, reopen the model without any other spreadsheets opened. Then close EconExpert-WIND and any extraneous menus will be deleted.

If you are using Excel 2007, the EconExpert Menu will appear in the “Add-Ins” Ribbon on the Vista Ribbon bar.

CONTENTS

NOTICES	2
COPYRIGHT NOTICE.....	2
CHANGING YOUR COMPUTER’S CLOCK.....	2
USE OF ECONEXPERT-WIND WITH MACROS ENABLED	2
PRODUCT WARRANTY AND WARRANTY LIMITATIONS	2
REMOVAL OF THE ECONEXPERT-WIND MENU.....	3
CONTENTS.....	4
FIGURES	6
OVERVIEW.....	7
INTRODUCTION.....	7
SUBSCRIPTIONS	7
SYSTEM REQUIREMENTS.....	11
HARDWARE	11
GETTING STARTED - INSTALLING ECONEXPERT-WIND	12
THE ECONEXPERT-WIND ON-LINE TUTORIAL	23
THE ECONEXPERT-WIND COMMAND MENU.....	24
NAVIGATE	25
PRINT	27
SENSITIVITIES	29
UTILITIES.....	32
HELP	44
WORKSHEET TABS	46
ADMINISTRATIVE SHEETS.....	46
SUMMARY SHEETS	47
INPUT SHEETS	48
REPORT SHEETS.....	49
GRAPHS SHEETS	55
INPUTS TO THE ECONEXPERT-WIND MODEL.....	56
TABLE 1 WIND GLOBAL INPUTS	56
TABLE 1C ANNUAL INPUTS	69
TABLE 1D - DATA CONVERSION SHEET.....	76
TABLE 1Q – QUICK PROJECT ANALYSIS	77
SAVING ECONEXPERT-WIND SPREADSHEETS	79
SAVING <i>FULLY FUNCTIONAL</i> COPIES OF THE MODEL.....	79
CREATING A <i>VALUES-ONLY</i> COPY OF THE ECONEXPERT-WIND MODEL	80
SENSITIVITY ANALYSES.....	81
SETTING THE TERM	82
SENSITIVITY INCREMENTS	82
TORNADO DIAGRAMS	84
CUSTOMIZING ECONEXPERT-WIND	86
FREE-FORM SECTIONS	86

NEW SHEETS.....86

APPENDICES 87

OVERVIEW OF CEI'S *ECONEXPERT*TM SOFTWARE SUITE 87

FIGURES

FIGURE 1 - HOW TO OBTAIN AN AUTHORIZED SUBSCRIPTION TO ECONEXPERT-WIND	9
FIGURE 3 - EXTENSION CODE SCREEN.....	9
FIGURE 4 MICROSOFT EXCEL ENABLE MACROS SCREEN.....	14
FIGURE 5 EXCEL OFFICE DIALOG SCREEN - SELECT "EXCEL OPTIONS".....	15
FIGURE 6 EXCEL OPTIONS > POPULAR - SELECT "SHOW DEVELOPER TAB IN THE RIBBON"	15
FIGURE 7 <i>DEVELOPER > MACRO SECURITY</i>	16
FIGURE 8 DEVELOPER > MACRO SECURITY	16
FIGURE 9 SECURITY WARNING MACROS HAVE BEEN DISABLED. <i>OPTIONS</i>	17
FIGURE 10 SECURITY WARNING MACROS HAVE BEEN DISABLED. <i>OPTIONS -> ENABLE THIS CONTENT</i>	18
FIGURE 12 - THE ECONEXPERT-WIND COMMAND MENU	24
FIGURE 14 - COMPARING DATA FILES - HIGHLIGHTING OF INPUTS THAT CHANGED IN A TARGET FILE	34
FIGURE 15 - COMPARING DATA FILES - QUANTIFYING THE DIFFERENCE IN INPUTS AND RESULTS IN A TARGET FILE VERSUS A REFERENCE FILE	36
FIGURE 16- DATA IMPORT INSTRUCTIONS.....	38
FIGURE 13 - EXAMPLE DISPLAY OF CURRENT CONTENTS OF HOLDING BINS	40
FIGURE 17 - TABLE 1 WIND GLOBAL INPUT CATEGORIES	57
FIGURE 18 - TABLE 1 WIND GLOBAL INPUTS – TAXES AND INVESTMENT TAX CREDITS	58
FIGURE 19 - TABLE 1 WIND GLOBAL INPUTS – TAXES AND INVESTMENT TAX CREDITS	60
FIGURE 20 - TABLE 1 WIND GLOBAL INPUTS – PPA PRICING STRUCTURE	60
FIGURE 21 - TABLE 1 WIND GLOBAL INPUTS – PPA PRICING SUMMARIES	61
FIGURE 22 - TABLE 1 WIND GLOBAL INPUTS – SPARE PARTS COSTS	63
FIGURE 23 - TABLE 1 WIND GLOBAL INPUTS – DEVELOPER ROYALTY	63
FIGURE 24 - TABLE 1 WIND GLOBAL INPUTS – LEASE LAND ROYALTY	63
FIGURE 25 - TABLE 1 WIND GLOBAL INPUTS - DEVELOPMENT COSTS.....	64
FIGURE 26 - TABLE 1 WIND GLOBAL INPUTS – WIND TURBINE COSTS	65
FIGURE 27 - TABLE 1 WIND GLOBAL INPUTS – EQUITY AND PROJECT OWNERSHIP	66
FIGURE 28 - USER DEFINED DEPRECIATION SCHEDULES IN TABLE 13 DEPRECIATION	68
FIGURE 29 - TABLE 1 WIND GLOBAL INPUTS - THE IRR GUESS	69
FIGURE 30 - TABLE 1C ANNUAL INPUTS - GNP ESCALATION RATE	71
FIGURE 31 - TABLE 1C ANNUAL INPUTS – WIND FARM PERFORMANCE	72
FIGURE 32 - TABLE 1C ANNUAL INPUTS - OTHER REVENUE SOURCES.....	73
FIGURE 33 - TABLE 1C ANNUAL INPUTS - FIXED AND VARIABLE O&M INPUTS.....	74
FIGURE 34 - TABLE 1Q QUICK PROJECT ANALYSIS	77
FIGURE 35 – TABLE 1 WIND GLOBAL INPUTS - THE IRR SENSITIVITY TERM	82
FIGURE 36 - GRAPHS PRODUCED FROM SENSITIVITY ANALYSES	83
FIGURE 37 - TORNADO DIAGRAMS DATA INPUT SHEET	84
FIGURE 38 - EXAMPLE TORNADO DIAGRAM	85
FIGURE 39 - EXAMPLE OF AREAS AS THE BOTTOM OF EACH SHEET FOR CUSTOM CALCULATIONS	86

Overview

Introduction

Thank you for choosing EconExpert-WIND of the family of EconExpert financial analysis tools. EconExpert-WIND is the first truly universal financial proforma for the wind power industry, designed to allow simplified or sophisticated analysis of any wind power project that sells energy to the grid, from the perspective of any stakeholder in the project or transaction. EconExpert-WIND is a sophisticated and highly flexible spreadsheet developed in Microsoft Excel^{®1} and can be effectively utilized to evaluate new project development, acquisitions or divestitures from small wind farms to utility scale power projects. The model, developed by Competitive Energy Insight, Inc. (CEI) a California Corporation with offices in San Diego, has evolved since 1997 as a tool first used extensively in CEI's private consulting practice in support of Fortune 500 clients to evaluate opportunities for development or acquisition of thermal power generation projects. Now, EconExpert-WIND has been transformed into a tool that can be used efficiently and effectively by project developers, utilities, equipment suppliers, consultants, banks and others in the industry to evaluate, study, make informed decisions on, structure contracts and track the economics of wind power generation investments.

The key to EconExpert-WIND and its sister models is the architecture which allows you to study any project through the models' input sheets, specifying the conditions of ownership, procurement, construction, financing, operation and electricity sales, taxes and deal structure for virtually any project, and then to quickly study how the economic viability of that project might be impacted by changes in market conditions. Built-in menus, wizards, automated functions, sensitivities, tornado diagrams, graphics and on-line help features will further assist you in evaluating opportunities and producing reports that clearly and accurately support the conclusions you reach.

This User's Manual has been developed to assist you in getting started using EconExpert-WIND, and to provide supporting documentation in the event that questions might arise as you use it. The User's Manual is complemented by On-Line Help and an On-Line Tutorial that can be accessed directly from the EconExpert-WIND model's Command menu.

Competitive Energy Insight would greatly appreciate your feedback and comments on EconExpert-WIND and our other software products and we are committed to both updating and improving the models to include additional functionality that is important and valuable to the energy industry.

Subscriptions

To purchase EconExpert-WIND or to extend your license, please contact Competitive Energy Insight via email or phone. Subscription rates are available upon request. Subscribers will be provided with free software training and access to all updates issued during the term of their Software License.

All users of the EconExpert-WIND model will be required to acknowledge their acceptance of the EconExpert-WIND Software License Agreement in order to fully enable the model. Please see *Section IV: Getting Started* of this manual for additional information regarding the Software License. A copy of the License is included on the License Sheet in the model and in the Appendix.

¹ Microsoft Excel[®] is a registered trademark of the Microsoft Corporation.

If you open EconExpert when your current license is within twenty-one days of expiration, the model will notify you that your license is about to expire. The EconExpert Help Menu includes an automated feature that allows you to extend the period of a license by entering a License Extension Code which can be provided by CEI. By contacting CEI and entering the necessary codes, your license term can be extended at any time. In the event that your installation of EconExpert-WIND experiences problems, this feature may also be used to revalidate a current license.

If you forward copies of EconExpert-WIND to others who do not have an active license, CEI can temporarily enable the model as *Fully Functional* using these License Codes. If others attempt to open a model you have sent them and they are not authorized, they will be advised how to contact CEI to obtain the needed codes. Without these codes, unauthorized copies of the model will not function properly. Once the authorized codes are entered, even if the model was provided to a potential user by someone other than CEI, all copies of EconExpert-WIND will function on the authorized computer during the authorized license period.

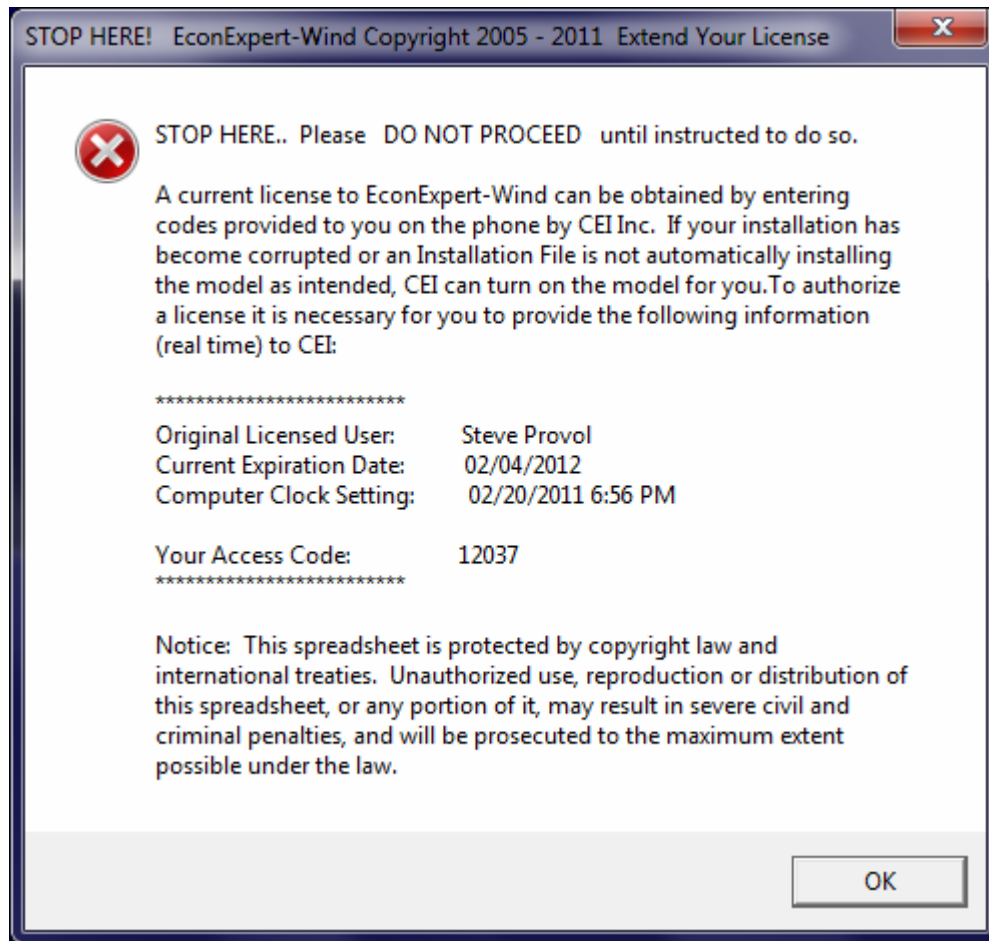
From the EconExpert-WIND Command Menu, licensed users can also create a *Values-Only* copy of the model that can be shared with others and viewed on any PC, including those that are not licensed to use the *Fully-Functional* model. In a *Values-Only* version of the model, much of the Command Menu's functionality will be preserved allowing others to easily view and print reports and charts for the specific case study that has been saved. A *Values-Only* copy will not allow users to change inputs or to evaluate any new cases. If you purchase a subscription to the EconExpert-WIND model, any copies of the model that you save as *Recoverable Values-Only* versions, can be restored to fully functional versions of the model once a license is renewed and since a *Values-Only* copy can be opened without a license, models can be permanently archived and reopened in this manner.

The Initial Installation File you receive from CEI will only enable the use of the model for a limited period, usually ~10 days. If you have purchased an extended period license to use the EconExpert-WIND model, contact CEI after performing your initial installation. CEI will provide you with the necessary License Extension Codes to fully enable your use of the model for the subscribed license period. To access the License Enable / License Extension feature, first contact CEI by telephone and then follow the instructions below to extend your license.

License Extension

1. From the *Utilities* menu > *Extend my License* > *Enable or Extend my EconExpert-WIND License* (Codes Required from CEI).
2. The following screen appears:

Figure 1 - How to Obtain an Authorized Subscription to EconExpert-WIND

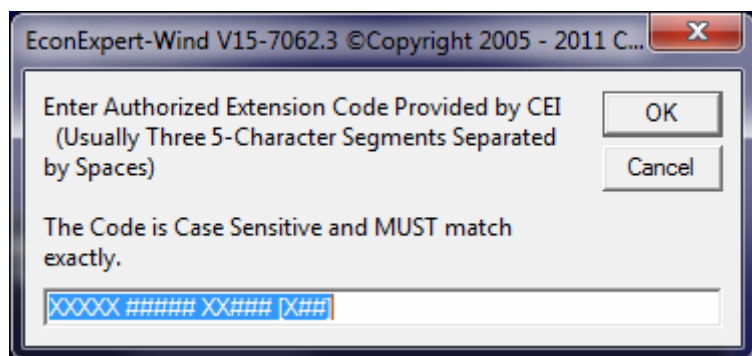


3. Contact CEI by telephone at 858-566-0221 and provide the requested information from the above screen.

NOTE Response codes provided by CEI must be used immediately as they are specific to your computer's date and time.

4. Select OK and the following screen will appear:

Figure 2 - Extension Code Screen



5. Enter the 15 character code provided to you by CEI. The License Extension Code is comprised of three sets of 5-Character Case Sensitive Segments, each separated by a single space.

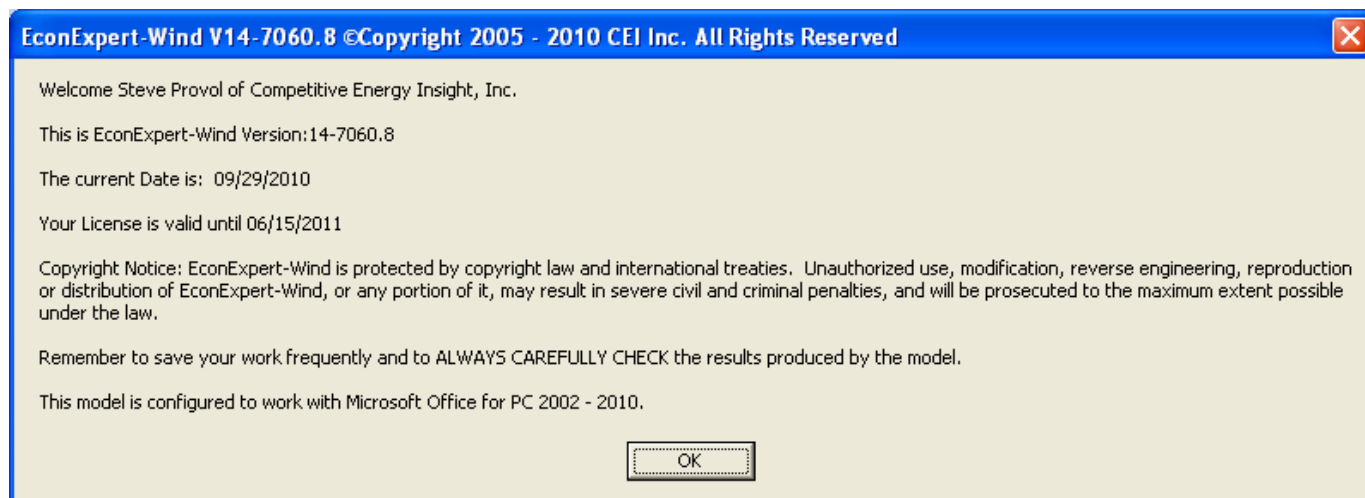
NOTE The code is **case sensitive** and must match the authorized code exactly. If it does not match, you will be prompted up to 3 times for the correct code.

6. After the correct code is entered you will be asked to enter your *User Name*, usually your *First Name* and *Last Name*.

NOTE The user name is usually your first and last name. This name must be at least 8 characters long. It will appear on the Program Greeting each time you open EconExpert-WIND. The company name will appear on all printed reports generated by the model.

7. Next, you will then see the following greeting acknowledging successful extension of the license.

Figure 4 - EconExpert-WIND Greeting Screen



8. Select **OK** and EconExpert-WIND will initialize and be ready for use. Other previously saved copies of EconExpert-WIND should perform normally during the new license term.

System Requirements

EconExpert-WIND is a Microsoft Excel® spreadsheet that has been complemented with sophisticated Visual Basic macros to add flexibility and functionality. While the spreadsheet will work effectively with a wide variety of computer hardware, operating systems and versions of Microsoft Excel, the following *minimum* system requirements are recommended:

Hardware

- 512 MB or more of Random Access Memory (RAM).
- To print very large (multiple-table) reports from the model, it is recommended that you have your system configured with at least 2MB of printer spooling memory. This can be as network or computer RAM or as a memory module on the printer.
- A graphics-capable display with setting of at least 800 x 600 Pixels and preferably 1024 x 768 Pixels.
- A graphics-capable printer.
- At least 15MB of available storage on you C:\ hard drive. This memory is needed for the initial installation only. After the installation is completed, the model can be saved and operated on the installed PC from any local or network drive.

Software

- Windows XP, Windows Vista or later Operating Systems.
- Microsoft Excel 2002, 2003, 2007, Office Vista, Office XP or later
- Winzip®² or the equivalent for decompressing the original files. Note that if requested the EconExpert-WIND model and documentation can be provided as self-extracting .exe files that will not require the installation or use of WinZip to decompress the files. The model is not conventionally delivered this way as many network administrators will not allow .exe files as attachments to emails.

NOTE While use of the EconExpert-WIND software has been successfully demonstrated with the listed systems, the configuration of individual systems or networks might be a factor in the successful installation of this software. If problems arise, please contact CEI at 858-566-0221.
--

² WinZip is a registered trademark of WinZip Computing, Inc.

Getting Started - Installing EconExpert-WIND

For licensed users of EconExpert, a file will be provided to you by email or can be downloaded (with approval codes) from our website. Note that the installation of the model MUST be initiated from your C: drive and the installation file MUST NOT have the READ ONLY attribute selected. The original file provided to you will be:

➤ *EconExpert-WIND Installation File V.xxx [Your Name] [Your Company].Zip*

Installation Copies should ONLY be provided by CEI Inc. and under the terms of the License Agreement, you are NOT permitted to provide your Installation Copy of the model to others. You will only need to open this file one time as an installed copy of the model will be saved you're the directory *C:\EconExpert Files* which the model will automatically add to your C: Drive.

➤ *EconExpert-WIND Users Manual V.xxx.PDF*

This is the User's Manual that can be downloaded from the CEI website (www.CEIInsight.com) as an Acrobat PDF file which can be viewed and printed using Adobe Acrobat.

It is possible that you received a previously installed copy of EconExpert-WIND from another user, and that you would like to enable that copy of the model using License Codes provided by CEI. If this is the case, please refer to [Section 2 on Page 10](#) of the User's Manual for instructions on how to enable a previously installed model on a new user's computer.

Installation files are compressed using WinZip, a utility that compresses files for more efficient saving and transport via email. To view the User's Manual or to install EconExpert-WIND, you must first decompress the files. If you already own WinZip, to unzip EconExpert please following these steps:

1. Copy the original .Zip (or .Exe files) to any location and folder on your C:/ drive (preferably into a new folder named *C:\EconExpert Files*).

NOTE Installation of the model MUST be initiated from your C:\ drive.
--

2. Unzip the .zip file provided by CEI onto your C:\ drive to the .xls version of the file.

The Initial Installation File you receive from CEI will only enable the use of the model for a limited period, usually ~10 days. If you have purchased an extended period license to use the EconExpert-Wind model, CEI will provide you with the necessary authorization codes to fully enable your use of the model for the subscribed license period (please see the *License Extension* section for instructions on extending your license).

3. Once the installation file has been extracted, make the appropriate changes as follows:

Settings for Windows Vista

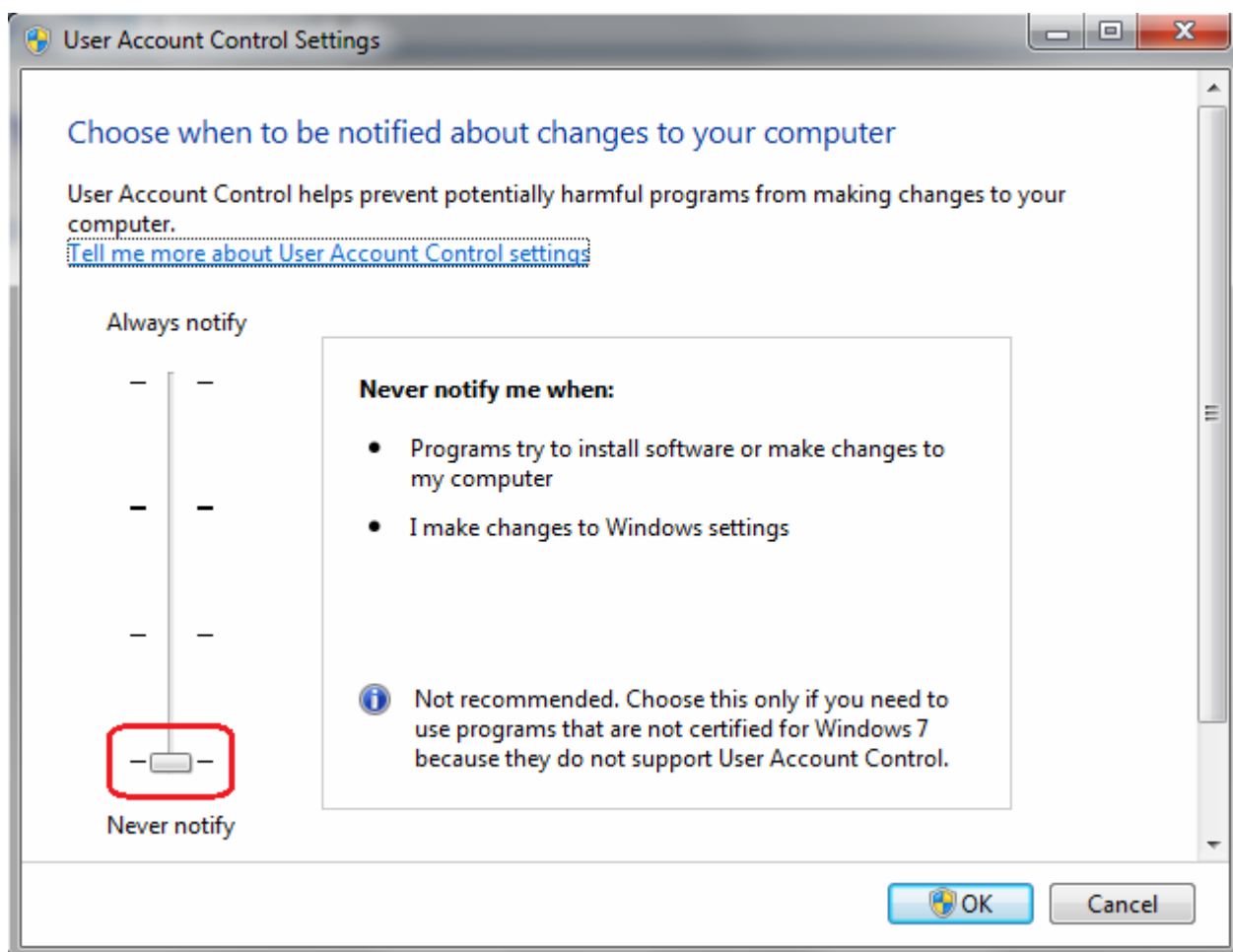
1. Select *Start Button*
2. Select *Control Panel*
3. Select *User Account Controls*
4. Click on the Radio Button to Disable *User Account Controls*
5. Accept and Close the *Control Panel*

6. Restart your computer

Settings for Windows 7 (Similar in Vista – See note at end of Section)

1. Select *Start Button*
2. Select *Control Panel*
3. In the *Search Control Panel* box on the top right enter: *User Account Controls*
4. Hit Enter
5. Click on the text on the left titled: *Action Center- Change User Account Control settings*
6. Drag the slider down to: *Never Notify*

IMPORTANT Windows will tell you this is *Not Recommended*. CEI does not believe that this introduces any substantive risks to your computer, but if you should be aware that you do this at your own risk. What you are doing here is authorizing yourself to have the rights to install software on this computer. This slider must be set to and remain in the setting *Never Notify* for EconExpert to open and function properly.



7. Close the *Control Panel*
8. Restart your computer

NOTE In Microsoft Vista, the equivalent setting is to unselect the *User Account Control Checkbox*.

4. Make the appropriate changes to Excel as directed below based on the version of Excel you are using:

Excel 2002, 2003

IMPORTANT EconExpert-WIND must be run with *Macros Enabled*. Microsoft Excel Versions 2002 and later include a Security Setting that can prevent the user from opening spreadsheets that contain macros. If this Security is set to HIGH, then you will not be permitted to open EconExpert-WIND with Macros Enabled.

1. Prior to opening EconExpert-WIND, you may want to check this setting on your version of Excel. To do so select *Tools > Macro > Security from the Excel Command Menu*.
2. On the Security Level Tab, the settings selection should be MEDIUM or LOW. The MEDIUM Setting will continue to provide you with the warning message concerning spreadsheets that contain macros.
3. Open the extracted .xls EconExpert-WIND file with Excel.

Also, it is recommended that no other worksheets be opened when you are installing EconExpert-WIND. If your security level setting is set to MEDIUM as discussed above, Microsoft Excel will now provide you with a warning which is similar to:

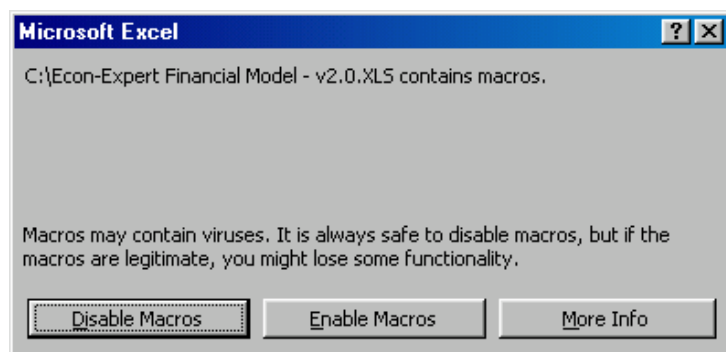


Figure 3 Microsoft Excel Enable Macros Screen

Excel 2007 / 2010

If you are using Excel 2007 / 2010, in order to properly access EconExpert please do the following:

1. Open Excel 2007 / 2010
2. Select the Office Button on the top left corner of your screen
3. Select the button labeled *Excel Options* on the bottom right of the dialog box:

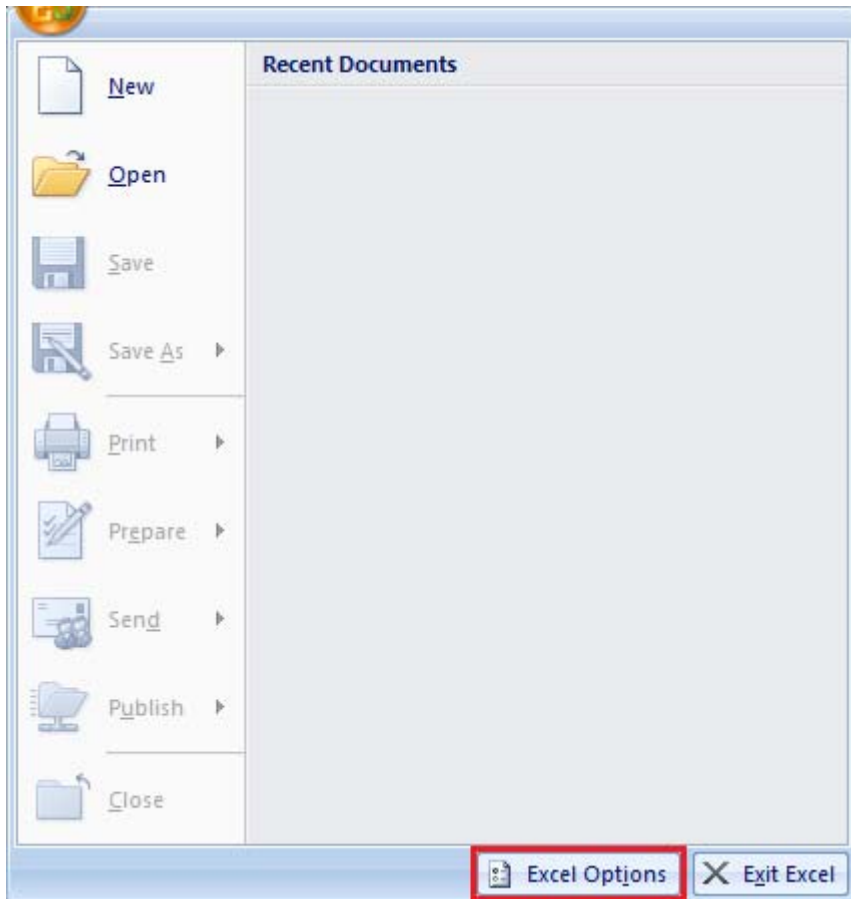


Figure 4 Excel Office Dialog screen - select "Excel Options"

4. Select the check box *Show Developer tab in the Ribbon* on the Popular tab:

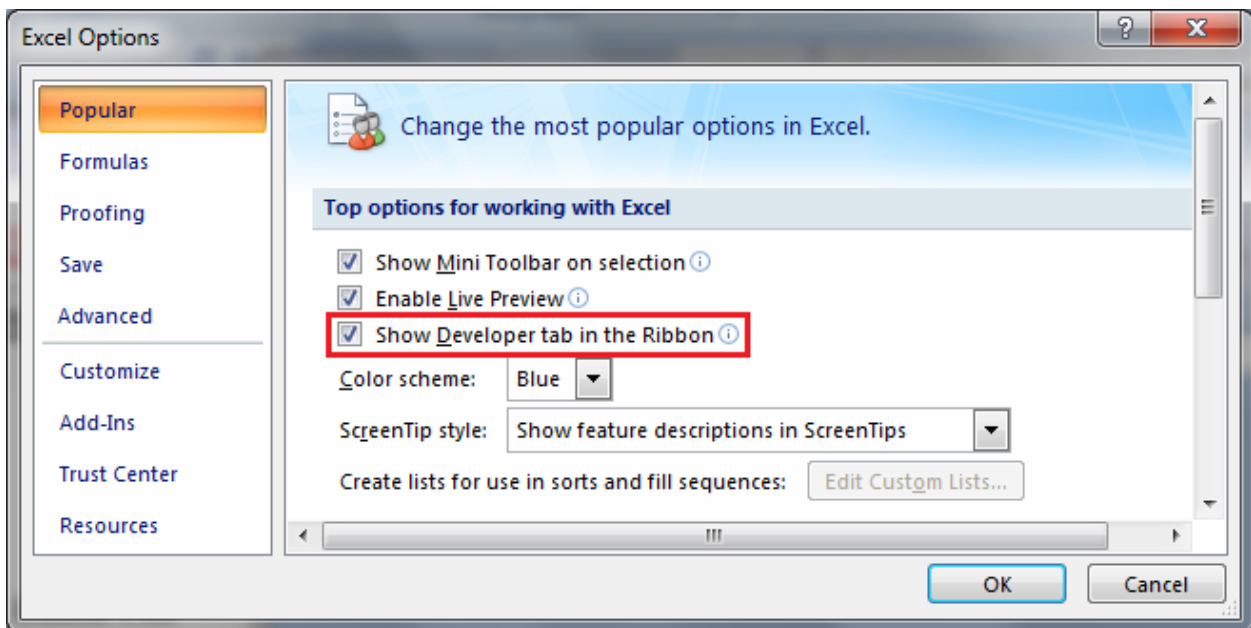


Figure 5 Excel Options > Popular - select "Show Developer tab in the Ribbon"

5. Select OK.
6. Under the Developer tab select *Macro Security*:

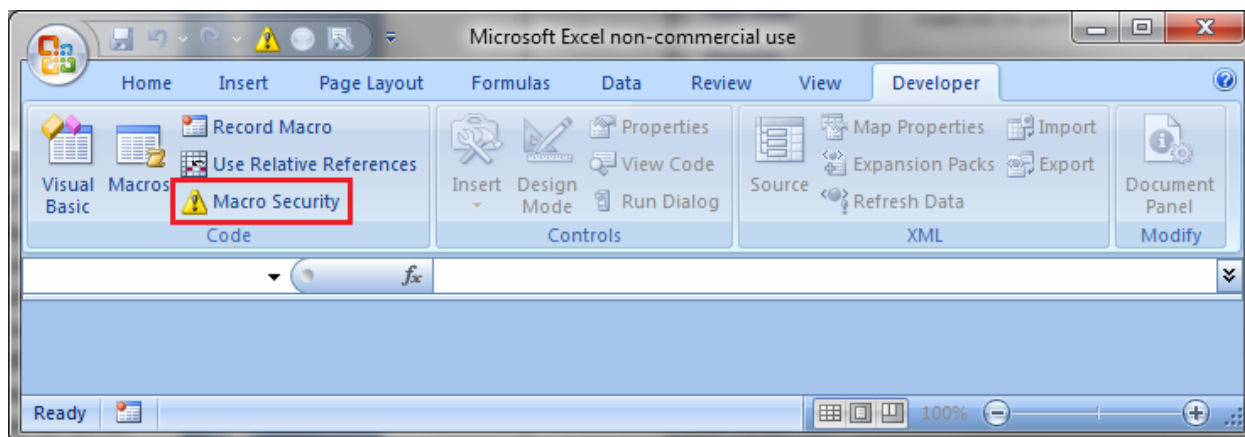


Figure 6 Developer > Macro Security

7. Select *Disable all macros with notification*
8. Select *Trust access to the VBA project object model*:

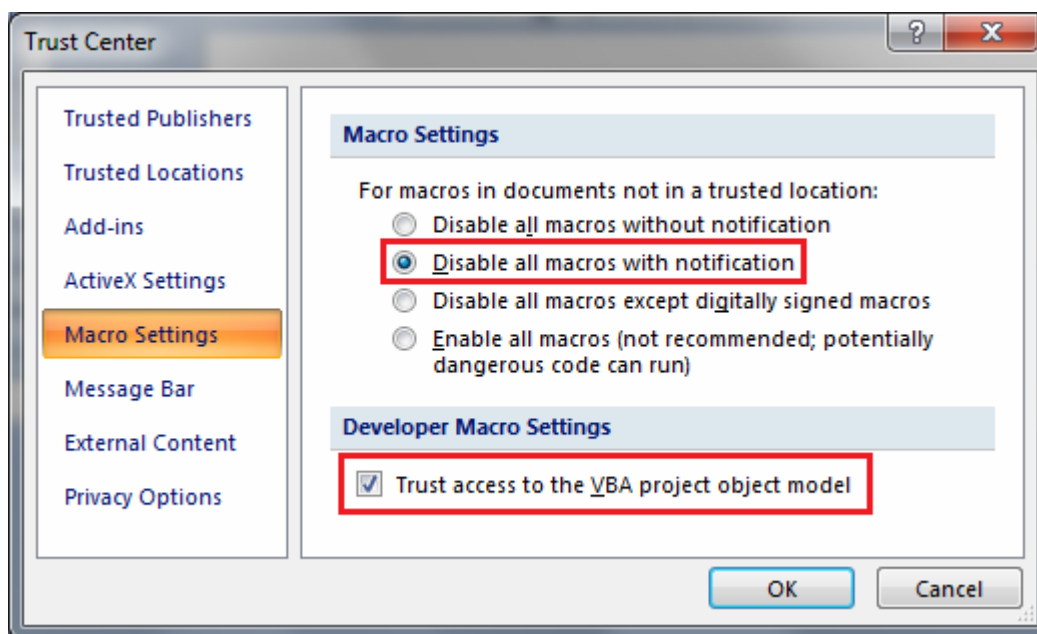


Figure 7 Developer > Macro Security

9. Open the extracted .xls EconExpert-WIND file with Excel.
10. Once the model is open, select *Options*:

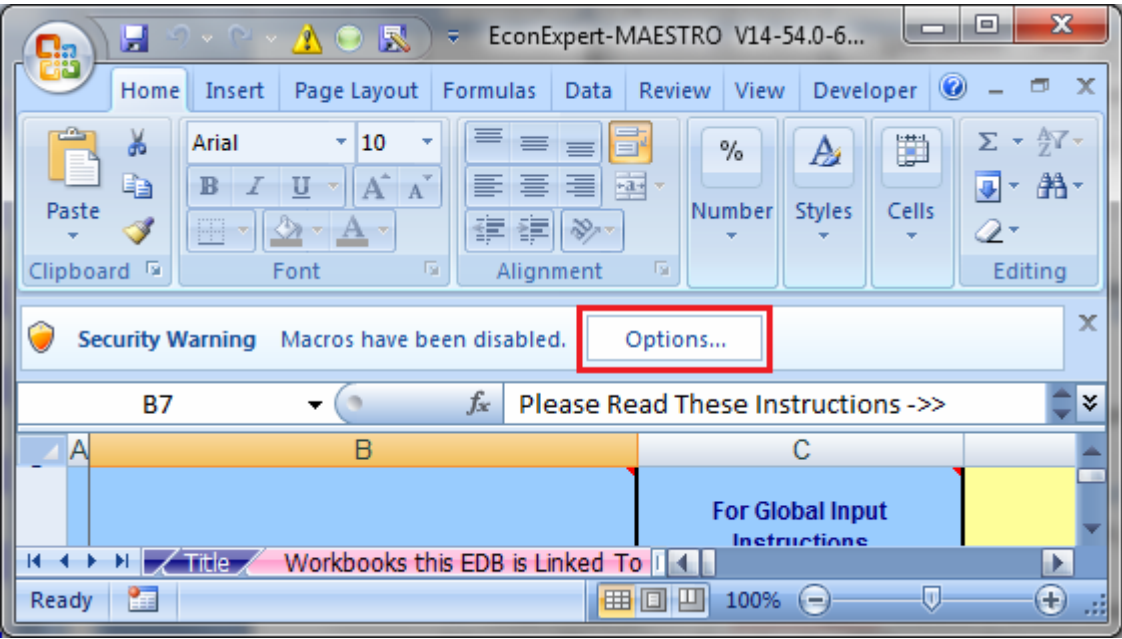


Figure 8 Security Warning Macros have been disabled. Options

11. Select *Enable this content*:

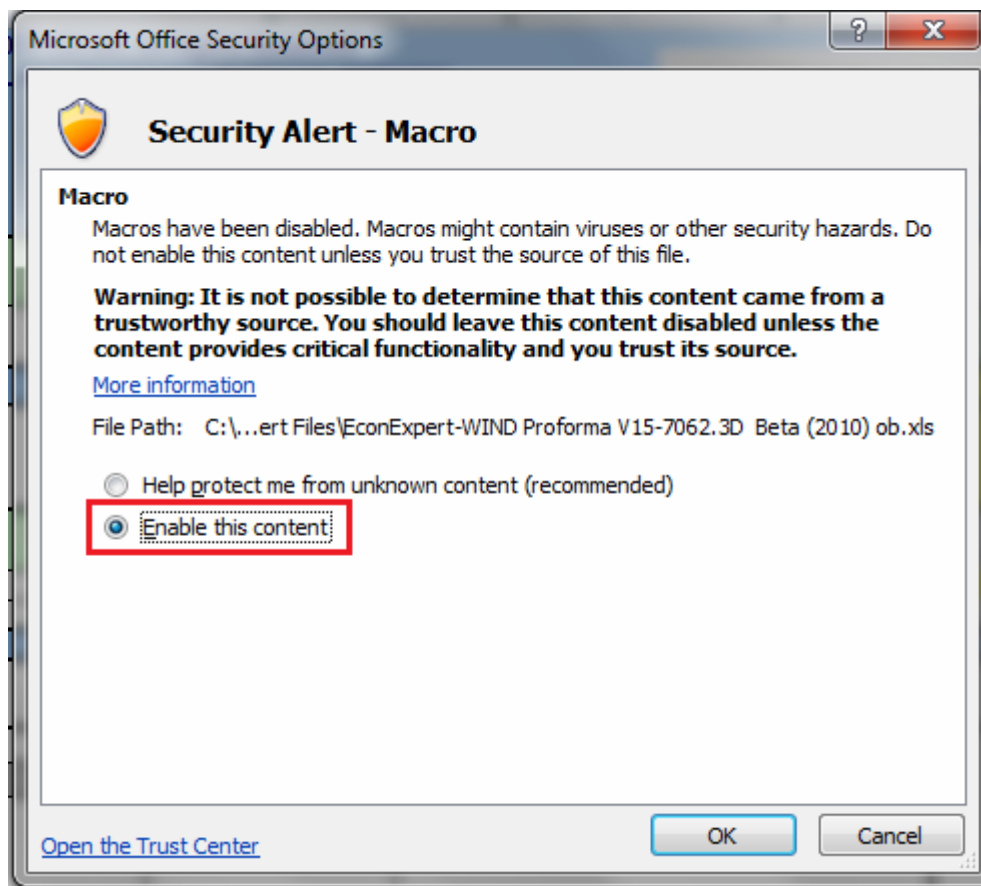
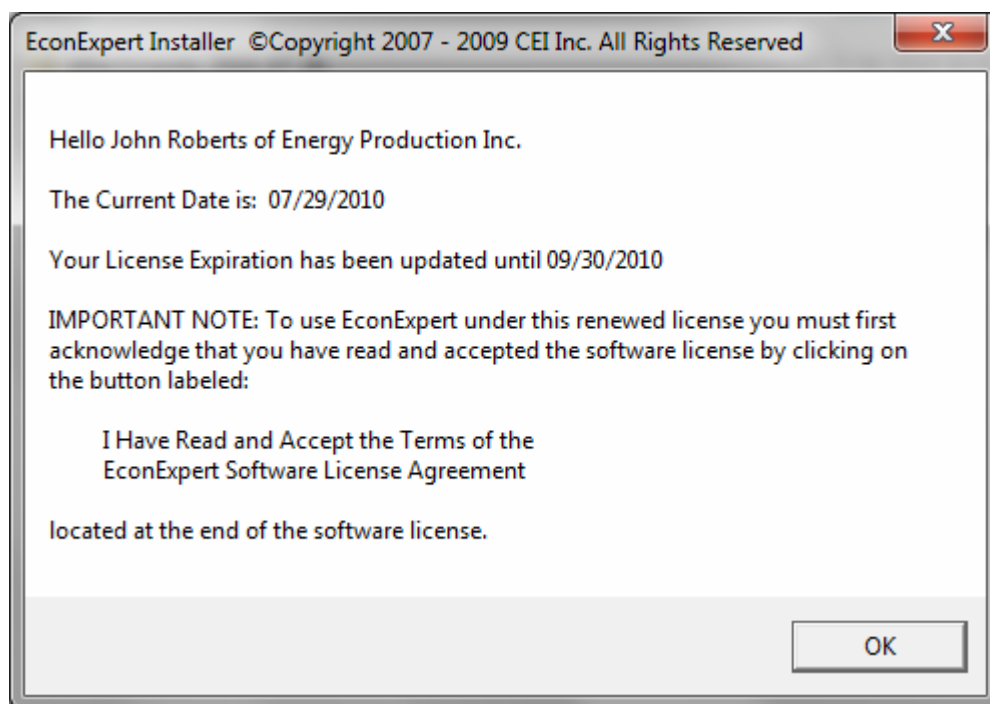


Figure 9 Security Warning Macros have been disabled. Options -> Enable this content

12. EconExpert will now load.
5. The installation of EconExpert-Wind will proceed. EconExpert-Wind will be saved to your C:\ Drive in the folder C:\EconExpert Files. Settings for use of the model will be initiated. Next the following screen will appear:



NOTE Please read this Copyright Notice carefully. Note that this screen will also advise you of the current date and on what date your license to use the software will expire.

6. Select OK.

NOTE The *Recalculation Feature* on Excel will be set to Automatic. This is the recommended setting for EconExpert-WIND.

A notice about providing copies of EconExpert-WIND to others will be displayed.

7. Select OK.
8. EconExpert-WIND will be initialized. In the upper left-hand corner of the spreadsheet, the message will appear:

EconExpert-WIND is Initializing Please Wait

The Initialization Procedure will occur every time that you open the model. ECONEXPERT-WIND will automatically check its setup to ensure that all of its internal settings are set correctly when you start work.

Finally another important message advising you that prior to using the model you must acknowledge that you accept the terms of the Software License Agreement. This is required to enable ECONEXPERT-WIND's linking of calculations.

You will be required to acknowledge your Agreement with the Software License each time you install the model on an authorized computer and each time you renew your license to the model. If desired, you may print the license by clicking on either of the *Print License* buttons at the top of the Screen. If you read the license on your monitor, **be sure to scroll down the screen and read ALL of the**

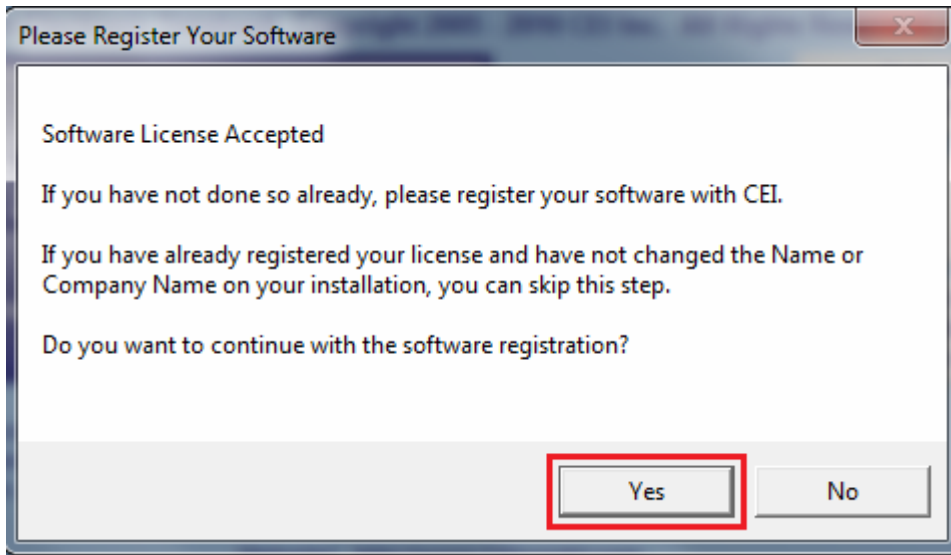
[applicable license terms](#). A copy of the ECONEXPERT-WIND Software License is also included in the Appendix to this User's Manual.

At the conclusion of the Software License, you will be provided with the option to **ACCEPT** or **DECLINE** the ECONEXPERT-WIND Software License Agreement. READ THIS LICENSE CAREFULLY as by accepting it you will be legally bound to its conditions. PLEASE NOTE THAT THE MODEL WILL NOT FUNCTION PROPERLY UNLESS YOU CHOOSE TO ACCEPT THE AGREEMENT!

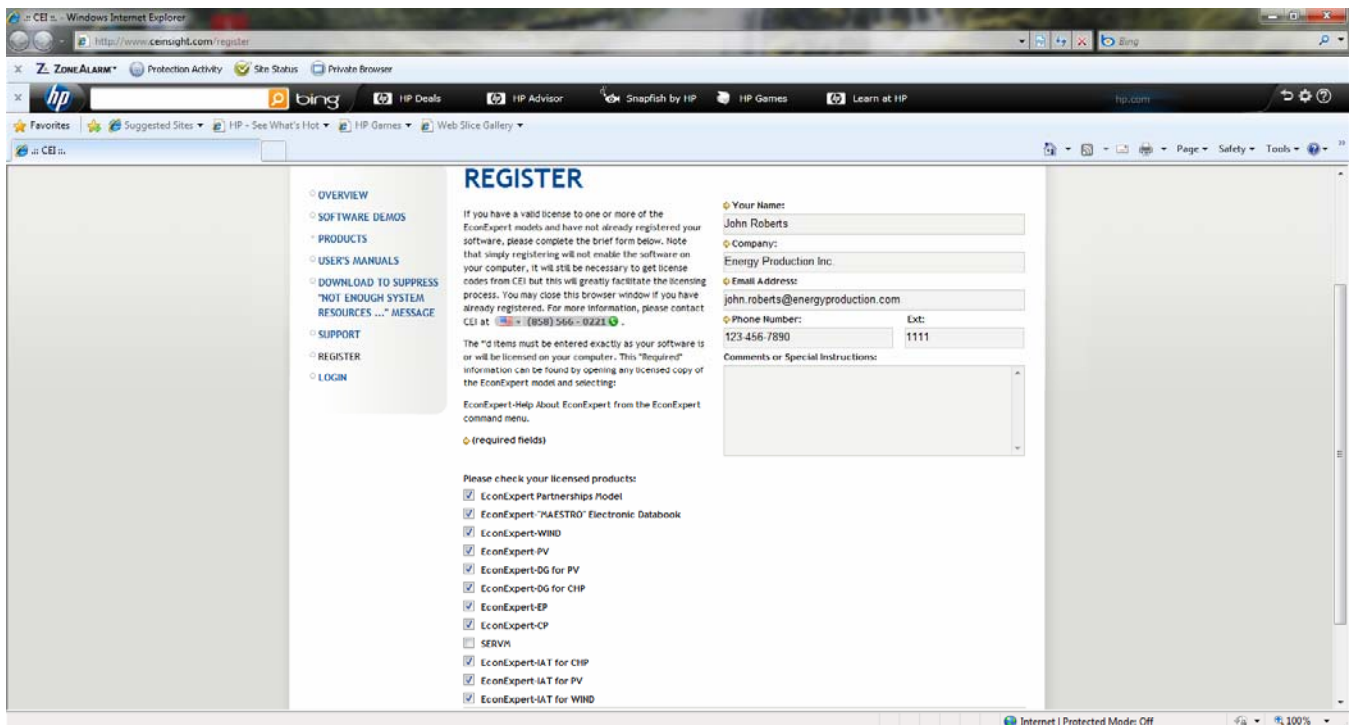
IMPORTANT - PLEASE READ THE TERMS OF YOUR SOFTWARE LICENSE			
*			
Today's Date	February 11, 2011		
License Period	August 10, 2010	Until	February 4, 2012
Print License See Bottom of Sheet to Accept		The EconExpert-WIND Financial Model by Competitive Energy Insight, Inc. SOFTWARE LICENSE AGREEMENT	
16. Attorneys Fees. The prevailing party in any dispute, mediation, arbitration, or litigation concerning this Agreement shall be entitled to receive from the other party its attorneys' fees and costs incurred in connection therewith. 17. Successors and Assigns. Subject to the prohibition on Licensee's assignment, this Agreement and all of the provisions hereof shall be binding upon and inure to the benefit of the parties hereto and their respective successors and permitted assigns. 18. Consult Licensed Council. Client expressly acknowledges that the models are based upon CEI's knowledge of the electric power and other industries, CEI does not provide accounting, engineering, or legal services and that it is Client's obligation to seek advice of qualified accountants, engineers, and attorneys in those specific fields, as well as other competent advisors in other areas of specialized expertise.			
By clicking on the button provided on the bottom of the License Sheet in the EconExpert Financial Model, User ACCEPTS or DECLINES acceptance of the terms of this Software License Agreement. If the License is declined, the EconExpert Model will not be fully installed and should not be used.			
I Have Read and I ACCEPT the terms of the foregoing EconExpert-WIND Software License Agreement Click Here to Accept and Enable the Model		I DECLINE the terms of the foregoing EconExpert-WIND Software License Agreement Click Here to Decline and Close Model	

9. The next screen confirms your license and gives you the option of registering your software:

NOTE You can choose to register the software at this time by selecting Yes. If you would prefer to register at a later time, you can do so by selecting *Add-Ins > EconExpert WIND Menu > Software Licensing and Registration > Register Your Software*.

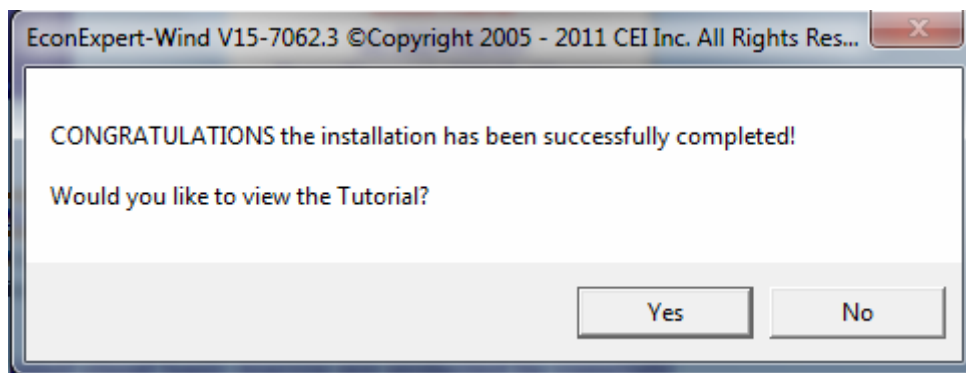


10. If you select Yes, you will be taken to the CEI website to fill in the registration page:



11. The next screen confirms the completion of your installation, and gives you the option of viewing a tutorial:

NOTE You can choose to view the tutorial at this time by selecting **Yes**. If you would prefer to view the tutorial at a later time, you can do so by selecting **Add-Ins > EconExpert-WIND Menu > Tutorial**.



12. The model has been fully initialized and is ready for use. You will now be transferred to the EconExpert-Wind Title Screen.

NOTE Copies of the spreadsheet will not work properly on computers that do not have licensed authorized installations. If you forward copies of the model to others who do not have an active license, or you try to use the model on another computer, that copy of the model can be enabled by obtaining the appropriate License Authorization Codes from CEI. Once entered, the codes will fully enable the use of EconExpert-Wind Title Screen on that computer for the subject license period. Also, the EconExpert-Wind Title Screen does not have the Enable model option; however, the model will not link to other workbooks and will not assimilate results from other workbooks unless the subject license is valid.

EconExpert-Wind is Initializing - Please Wait

- Click Here to View Website -

EconExpert - WIND Model the Future

A "Universal" Financial Proforma



Click Here to Start:
[1. Where you left-off, or](#)
[2. At Table 1](#)
[Wind Global Inputs](#)

Click Here to REFRESH EconExpert-WIND Menu

★

Website: <http://www.CEIinsight.com>

You may download the EconExpert User's Manual from the Website or contact us at:
Competitive Energy Insight, Inc. 12025 Blue Diamond Court San Diego, CA 92131
Tel: (858) 566 - 0221 Fax: (858) 566 - 0287

This software is for the use by licensed users only. This spreadsheet and its associated visual basic macros are protected by copyright law and international treaties. Unauthorized reproduction, reverse engineering, modification or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law.

Licensed to Steve Provol of Competitive Energy Insight, Inc. Your License Expires on: 02/04/2012

EconExpert-WIND is Enabled

Congratulations! You are now ready to use EconExpert-WIND!

NOTE EconExpert will create the folder *C:\EconExpert Files*. This is where the now installed model will be saved and where you will also save all other Add-Ins to EconExpert such as sensitivity charts and databases where applicable. Note also that when you run the models in the future, you will be able to rename the models you create and save them to any folder or storage media. All will run on the licensed PC.

NOTE If the Display Setting in Windows is set to other than the recommended setting of 1024 x 768 pixels, a notice will appear during the installation, giving you the option to reset the display settings in Windows or to modify the Zoom settings in EconExpert-WIND from the default. The Zoom setting can also be automatically reset by selecting: *UTILITIES>Table Viewing and Formatting>Zoom Settings for All Tables [Setting]* on the EconExpert-WIND Command Menu.

The EconExpert-WIND On-Line Tutorial

EconExpert-WIND includes an On-Line Tutorial that will guide you through the important features of the model. After accepting the terms of the EconExpert-WIND License Agreement, you will be asked if you would like to view the Tutorial. The Tutorial may also be viewed at any time by selecting the Tutorial Option from the EconExpert Help Menu. It is highly recommended that new users review the tutorial and the examples in the Appendix to this User's Manual.

The Tutorial is broken down into the following sections:

- Overview
- Command Menus
- Help Features
- Worksheet Tabs and Tables in the Model
- Customizing the Model
- Information on How to Extend Your License to Use the Model

At the beginning of each section you will have the option to skip forward to a later section.

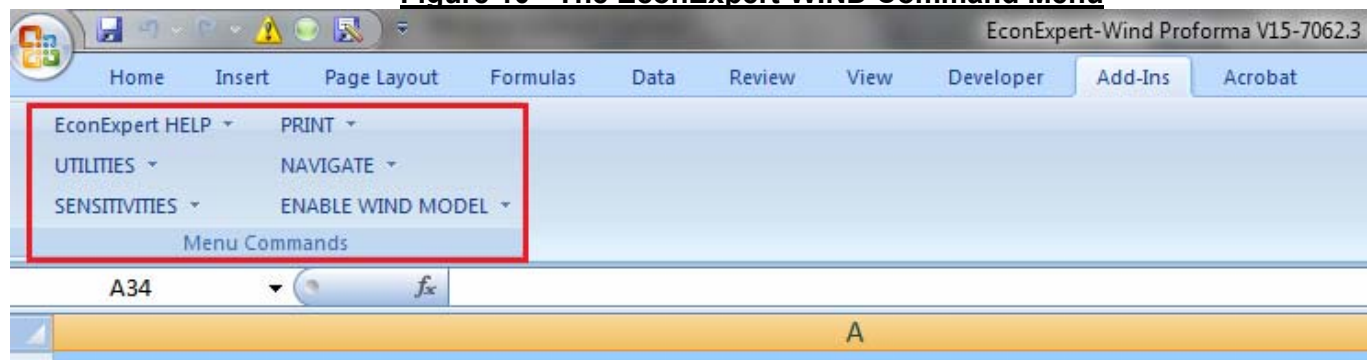
The EconExpert-WIND Command Menu

EconExpert-WIND includes a Custom Command Menu that in Excel 2002 and alter appears on the Excel Menu Bar to the right of or below the Excel's menu Help Option. In Excel 2007 the Custom Command Menu appears under the *Add-Ins* option on the Excel 2007 ribbon. The EconExpert-WIND Command Menu provides you with control of the EconExpert-WIND model's special functions and On-Line Help Features. The menu will be added to the Excel Menu bar each time that you open the EconExpert-WIND model and will be deleted each time you close it. If you become locked up in Windows when EconExpert-WIND is opened, it is possible that the menu will appear when you reopen Excel even if EconExpert is not opened. To delete the extraneous menu simply reopen and then close the model.

If you are using Excel 2007, the EconExpert Menu will appear in the *Add-Ins* Ribbon on the Vista Ribbon bar.

The Command Menu appears at the top of the EconExpert-WIND screen as shown below: The various options in the Command Menu are described following the Figure.

Figure 10 - The EconExpert-WIND Command Menu



The six options provided on the EconExpert-WIND Command Menu are listed below. To select any of them click on the desired option, or hold down the Alt key and select the underlined character:

- Enable Wind Model
- Navigate
- Print
- Sensitivities
- Utilities
- EconExpert HELP

If you are using Excel 2007 or 2010, the Menu will appear under the *Add-Ins* option on the ribbon bar.

Navigate

As an alternative to selecting from the worksheet tabs (located on the bottom of the Excel Screen), the NAVIGATE Menu provides you with another means for locating and viewing the specific inputs, and various tables and charts, in the EconExpert-WIND model. Options provided on this menu include:

Top of Quick Analysis Sheet	
Global Inputs - Table 1	▶
Annual Inputs - Titles	▶
Data Conversion - Table 1D	▶
Results Tables	▶
Summaries	▶
Sensitivity Graphs	▶
Tornado Diagrams	▶
Tornado Tables	▶
Project Valuation Tables	▶
Sensitivity Tables	▶
Title Sheet	▶
Software License	▶

- **Top of Quick Analysis Sheet**
The *Quick Analysis Sheet* is an input sheet for simple deal screening and project economic analysis.
- **Global Inputs - Table 1**
To locate specific input categories, select from the sub-menu a list of the Input Categories that are located on *Table 1 Wind Global Inputs*. Inputs on this sheet typically apply over the life of the project or are entered as a single value and then escalated at a constant rate.
- **Annual Inputs - Titles**
The *Wind Annual Inputs Table* is an optional table used to refine the setup that you have developed using Table 1 Wind Global Inputs. To locate specific input categories, select from the sub-menu a list of Input Categories used in Table 1C Annual Inputs. Annual Inputs are inputs that apply in a single year during the life of the project. When entered, non-zero inputs or results generated using formulas in the Annual Inputs Table will override or will be added to results otherwise calculated using the corresponding Global Input.
- **Data Conversion – Table 1D**
Select from a list of Input Categories used in the *Data Conversion Sheet*. The Data Conversion Sheet allows you to enter forward pricing data in up to 24 block periods/year and then to convert that

data to an equivalent annual format for use in EconExpert-WIND.

- **Results Tables**
Select from a list of various *Results Tables* produced by the model. The *Results Tables* are also identified by the *Worksheet Tabs* shown at the bottom of the Excel screen.
- **Summaries**
There are two summary tables, a comparison sheet, and the status sheet that can access via this Navigate menu option.
- **Sensitivity Graphs**
The graphs that are produced from the many sensitivity options. Navigation to the results in tabular format is described below.
- **Tornado Diagrams**
Select to view the tables and graphs produced by EconExpert-WIND that are used to generate the Tornado Diagrams. Navigation to the results in tabular format is described below.
- **Tornado Tables**
Select to view the tables and graphs produced by EconExpert-WIND that are used to generate the Tornado Diagrams. Navigation to the results in graphical format is described above.
- **Project Valuation Tables**
The tables associated with the valuation of a project or asset based on the target Internal Rate of Return (IRR) that a 'for-profit' investor would target to achieve. Navigation to the results in graphical format is described above.
- **Sensitivity Tables**
The tables that are produced from the many sensitivity options. Navigation to the results in graphical format is described above.
- **Title Sheet**
Select to view title sheet.
- **Software License**
Select to view software license.

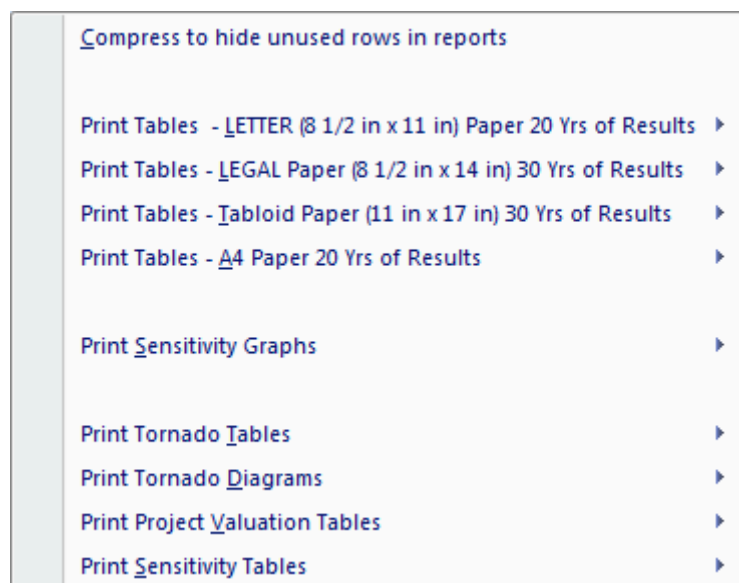
Print

The PRINT Menu provides you with options for printing Tables and Graphs generated by the EconExpert-WIND model. Tables and graphs in the model can be generated in multiple formats, with options to print tables selectively or in various levels of summary detail.

If desired, you can also create your own custom reports using the Excel *File>Page Setup* or *File>Print* options.

NOTE The EconExpert-WIND Software License Agreement requires that you include the Copyright Notice on any printed reports that you create.

Options on the PRINT menu include:



- Compress to hide unused rows in reports
This features hides any rows that are blank, eliminating rows are not relevant to your reports
- Print Tables - LETTER (8 ½ x 11 in.) Paper 20 Yrs of Results
Select this option to print the first 24 months of the Construction Period results or the first 20 years of the Operating Period Results to letter sized paper. Note that Excel must be pointed to a printer with letter paper in the selected paper tray.
- Tables - LEGAL Paper (8 ½ x 14 in.) 30 Years of Results
Select this option to print the first 36 months of the Construction Period results or the first 30 years of the Operating Period results to legal sized paper. Note that Excel must be pointed to a printer with legal paper in the selected paper tray.
- Tables – Tabloid Paper (11 x 17 in.) 30 Years of Results

Select this option to print the first 36 months of the Construction Period results or the first 30 years of the Operating Period results to 11 x 17 in. paper. This is the largest format printout. Note that Excel must be pointed to a printer with tabloid paper in the selected paper tray.

- **Tables – A4 Paper 20 Yrs of Results**
Select this option to print the first 24 months of the Construction Period results or the first 20 years of the Operating Period results to European Style A4 Paper.
- **Print Sensitivity Graphs**
Print the selected graphs that are included on the Sensitivities Sheet.

NOTE All graphs can be printed by unprotecting the graphs sheet, selecting the graph and selecting the print icon on the Excel menu bar.
--

- **Print Tornado Tables**
Print the Tables that are generated each time you create a Tornado Diagram from the *Sensitivities Menu*.
- **Print Tornado Diagrams**
Print the Charts that are generated each time you create a Tornado Diagram from the *Sensitivities Menu*.
- **Print Project Valuation Tables**
Print the selected tables that are included on the *Sensitivities Sheet*.
- **Print Sensitivity Tables**
Print the selected tables that are included on the *Sensitivities Sheet*.

Sensitivities

In the most recent versions of EconExpert-Wind, the sensitivity charts are included in a separate file.

The SENSITIVITIES Menu provides you with options to perform special calculations including the calculation of the annual Project Rate Base and the Project Valuation, and to study how the Project Valuation, Net Present Value or Internal Rate of Return of the current case will be impacted by incrementing key inputs to the model. The Sensitivities are performed by varying the identified inputs over the life of the project.

Because graphs take up a lot of memory in Excel, there is only an IRR or NPV version of each graph in the model. To change the project return metric for a chart:

1. Choose *Tools>Protection>Unprotect Sheet* from the Command Menu
2. Right Click on the chart
3. Select *Source Data*
4. Trace the data back to the Sensitivities tab
5. Re-link the graph to the data that you want to see (e.g. from NPV to IRR)
6. Change the chart titles

Options on the SENSITIVITY menu include:

Project Valuation Calculations	▶
Project Valuation Sensitivities	▶
Compare Breakeven Value of ITC vs PTC	
Monte Carlo Simulations of Annual Wind Profiles	
Sculpt / Structure Senior Debt Payments	
Parametric Sensitivities	
Tornado Diagrams	▶
VW Single Case Sensitivities Listed Below VW	▶
Capital Investment Sensitivity	
Electric Energy Sales Sensitivities	▶
Financing Sensitivities	▶
Wind Project Operations and Operating Cost Sensitivities	▶
Production Tax Credits (PTC)	▶
Revenue Sensitivities	▶
Clear ALL Sensitivity Cases	
Run All Single Case Sensitivities	
EconExpert-Wind Sensitivity Addins	▶

- **Project Valuation Calculations**
EconExpert-WIND includes an automated feature that allows you to calculate the valuation of a project based on the target IRR or NPV that an investor would target to achieve. The valuation of the project can be determined based on a target leveraged or unleveraged investment scenario. EconExpert-WIND will report the change in valuation from the base case and the net project valuation exclusive of the investor's development and soft costs.
- **Project Valuation Sensitivities**
After identifying the project valuation, you can perform automated sensitivities analysis to determine how changes in electricity prices would impact that valuation.
- **Compare Breakeven Value of ITC vs. PTC**
- **Monte Carlo Simulations of Annual Wind Profiles**
- **Sculpt / Structure Senior Debt Payments**
- **Parametric Sensitivities**
- **Tornado Diagrams**

Tornado Diagrams illustrate how the NPV or IRR of the current case will be impacted by individually incrementing multiple inputs. Each Tornado Diagram is generated by varying the inputs over the life of the project, based on inputs to either Table 1 or Table 1C.

- **Single Case Sensitivities**
The remaining options allow you to selectively run individual Sensitivities listed in a subsequent chapter. The individual Sensitivity Tables and Graphs can be viewed from the Navigate menu or printed from the PRINT Menu. The individual sensitivity cases are:
 - Capital Investment Sensitivity
 - Electric Energy Sales Sensitivities
 - Financing Sensitivities
 - Wind Project Operations and Operating Cost Sensitivities
 - Production Tax Credits (PTC)
 - Revenue Sensitivities
- **Clear All Sensitivity Cases**
This option is used to clear all the existing sensitivity cases.
- **Run All Single Case Sensitivities**
You can run all of the programmed single case sensitivities in a single batch, updating all of the corresponding graphs and printing them if desired. This selection will take some time to execute if selected. It is highly recommended that you run all of the Sensitivity Cases prior to creating a *Values-Only* copy of the model, to ensure that all of the Sensitivities are updated to match the current *Values-Only* case.
- **EconExpert-Wind Sensitivity Add-Ins**
This option lists all the sensitivity add-ins.

NOTE For additional information on using EconExpert-WIND's Automated Sensitivities and Tornado Diagrams, see the Sensitivities section later in this manual.

Utilities

The UTILITIES Menu provides useful tools to manage the model. Features on the UTILITIES Menu include:



- Load Global Inputs Wizard
The Global Inputs Wizard will walk you through each section of *Table 1 Wind Global Inputs*, and allow you to directly jump to any section. Each section has its own print area which is also access from the Wizard
- *Pop-Up* Results Summaries
These summaries are convenient pop-up reports that show:
 - Before Tax Returns
 - After Tax Returns
 - Development Costs
 - Installation Costs
 - Revenues
 - Operating Expenses
 - Debt Service
 - Project Cash Flow

To close the summary simply click on the 'X' box on the top right of the form.

- Compare Econ-Expert Wind Cases or Files to Identify Changes

- Comparison Feature #1:
You can compare the **Input Sheets** of two different cases and identify which inputs have changed.

This procedure allows you to track input changes between two different EconExpert-WIND models. Input categories that have changed are compared and identified (by highlighting on an **orange** background). A new worksheet is created with copies of all of the tables in the model, with the changed items highlighted.

You can also *Track* input changes between an active input sheet and a holding bin in the same model by saving the current model as two different file names, with the desired cases to be compared each respectively activated in one of the files.

NOTE This is a memory (RAM) intensive procedure. It is recommended that you close other applications and spreadsheets before executing the comparison procedure.
--

The procedure will involve three spreadsheets:

- The *target* EconExpert-WIND model is the model that you want to identify the changes in.
- The **target** model *must* be opened *first*.
- The *reference* EconExpert-WIND model is the model that you want compare/track changes against.
- The **reference** model *must* be opened *second*.
- Record the filename of the *reference* model as you will need to enter this information.
- The *comparison* file (which you will name) that highlights the fields that have been changed.

NOTE The <i>target</i> and <i>reference</i> models must be enabled .
--

- A copy of each of the respective input sheets from the *target* model will be created in the *comparison* file with a name that you designate. The *comparison file* will contain copies of the respective Global Inputs, Annual Inputs and Data Conversion Input Sheets, with the changed input fields *highlighted* on a bright **orange** background.
- Once initiated, you will not be able to terminate this macro until it is completed. You will be requested to provide two pieces of information:
- The Name of the *reference* EconExpert-WIND Data File. The *reference* file is the one that you want to compare the *target* file against.
- The Name of the new *comparison* file you want to create that will highlight the changes between the cases. This *comparison* file will be saved in the same directory as the *target* file that you are identifying changes in.

Other important requirements for running this macro include:

- The name you entered for the *reference* data file must be precisely correct.
- Both the *target* and *reference* models must be **enabled**.
- There must **not** be a file with the same name as the *comparison* file that is currently opened.

- Both the *target* and *reference* files have at least two available windows. If they do not, to add a window from the Excel Command Menu select *Window>New Window* from the Excel menu to add a window to the file where it is required.

The Figure below illustrates how changes in the Global Inputs Sheet are highlighted. The *current* (*target*) case is illustrated in a new worksheet with each of the input cells that have changed highlighted in **orange**.

The **orange** shaded cells indicate where input changes have occurred in the target file relative to the reference file.

Figure 11 - Comparing Data Files - Highlighting of Inputs that Changed in a TARGET File

- Comparison Feature #2:**
You can compare **all** of the sheets, quantifying the magnitude of changes between two cases.

This Macro works only with **identical versions** of EconExpert-WIND. This procedure allows you to *compare* and *quantify* differences between two different EconExpert-WIND models. You can also *compare* and *quantify* differences between an active input sheet and a holding bin in the same model by saving the current model as two different file names, with the desired cases to be compared each respectively activated in one of the files.

A new worksheet is created with copies of all of the tables in the model. Every cell in the model (inputs or calculations) that has changed is identified (by highlighting with an **orange** background) and the amount of the difference between the two cases (either positive or negative) is quantified.

NOTE This is a **memory (RAM) intensive** procedure. It is recommended that you close other applications and spreadsheets before it is initiated.

The procedure will involve four spreadsheets:

- The *target* EconExpert-WIND is the model that you want to identify the changes in. The *target* model *must* be opened **first**.
- The *reference* EconExpert-WIND model is the model that you want compare changes against.
- The *reference* model *must* be opened **second**.
- Record the filename of the *reference* model as you will need to enter this information.
- The *comparison* file (which you will name) will highlight the fields that have been changed.
- A *temporary file* that EconExpert will create and then delete.

NOTE The *target* and *reference* models **must** each have at least **two** available windows, and the *target* and *reference* models **must** have different names and **both must be enabled**.

A copy of each of the respective Input and Results Sheets from the *target* model will be created in the *comparison* file with a name that you designate. All changes will be quantified and highlighted on a **bright orange** background. Once initiated, you will not be able to terminate this macro until it is completed.

You will be asked for two items when this procedure is initiated:

- The name of the *reference* EconExpert-WIND Data File. The *reference* file is the one that you want to compare the *target* file against.
- The name of the new *comparison* file you want to create that will quantify and highlight the differences between the cases. This *comparison* file will be saved in the same directory as the *target* file that you are identifying changes in.

Other important requirements for running this macro include:

- The name you entered for the *reference* data file must be precisely correct.
- Both the *target* and *reference* models must be **enabled**.
- There must **not** be a file with the same name as the *comparison* file that is currently opened.
- Both the *target* and *reference* files have at least two available windows. If they do not, to add a window from the Excel Command Menu select *Window>New Window* from the Excel menu to add a window to the file where it is required.

The Figure on the next page illustrates how changes in the *Global Inputs Sheet* are highlighted. The current (target) case is illustrated in a new worksheet with each of the input cells that have changed highlighted in **orange**:

Figure 12 - Comparing Data Files - Quantifying the Difference in Inputs and Results in a TARGET File versus a REFERENCE FILE

Table 1 (Section 1A) - GLOBAL INPUTS

NPV and IRR Summary

Years	0	0	0	Years	0	0	0
Leveraged	-0.05%	-0.83%	-0.48%	Discount Rate	1.706	1.833	1.833
Unleveraged	-0.31%	-0.24%	-0.12%		(4.496)	(4.934)	(4.934)

Energy and Fuel Pricing Profiles

Period 1A	Period 1B
Energy Sales, \$/MMWh	\$/MMWh
Escalation, %	Escalation, %
Net Energy Price to Customer, \$/MMWh	Net Energy Price to Customer, \$/MMWh

Economic Factors

Base Year (Constant Dollar in Mid-Year)	0
GNP Escalation Rate for Revs. & Exps. %	0.00%
Discount Rate for Leveraged NPV, %	-1.00%
Discount Rate for Unleveraged NPV, %	0.00%
Interest Rate Earned on Escrowed Funds	0.00%

EconExpert-LP V4.0 - 341 Copyright 2001, 2002, 2003 Competitive Energy Insight Inc. All Rights Reserved

TABLE 4

April 23, 2003 Example Frame F Combined Cycle Case

OPERATING FACTORS AND EXPENSES

Year of Operation	2003	2006	2007	2008	2009	2010	2011
Year of Operation	2003	2006	2007	2008	2009	2010	2011
Months of Operation During Year	12	12	12	12	12	12	12
OPERATING EXPENSES 1000\$/Year (Owner's Share)	Owner's Share 100%						
Year of Operation	2006	2007	2008	2009	2010	2011	
Corresponding Annual Hours of Full Load Operation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Effective Annual Capacity Factor	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Months of Operation	-	-	-	-	-	-	
Owner's Operating Expenses 1000\$/Current \$	Total						
Period 1AB Fuel	\$ 5,370	423	(1,689)	(1,772)	(1,823)	1,789	1,138
Period 2AB Fuel	\$ 264,810	7,742	10,244	10,823	11,429	11,145	11,307
Fuel Transportation 1	\$ -	-	-	-	-	-	-
Fuel Transportation 2	\$ -	-	-	-	-	-	-
User Defined Variable O&M - Non-Fuel Variable O&M	\$ 6,499	-	167	228	292	332	184
User Defined Variable O&M2 - User Defined Category 2	\$ -	-	-	-	-	-	-
Sorbent for SO2 Removal	\$ -	-	-	-	-	-	-
Anhydrous Ammonia for NOx Control	\$ 872	16	29	33	38	40	32
Disposal of Ash	\$ -	-	-	-	-	-	-
Purchased Power	\$ -	-	-	-	-	-	-
Purchased Steam	\$ -	-	-	-	-	-	-
Annual Emissions Allowances	\$ -	-	-	-	-	-	-
User Defined Fixed O&M1 - Plant Labor	\$ -	-	-	-	-	-	-
User Defined Fixed O&M2 - User Defined Category 2	\$ -	-	-	-	-	-	-
Additional Expenses 1, 1000\$/yr	\$ -	-	-	-	-	-	-
Additional Expenses 2, 1000\$/yr	\$ -	-	-	-	-	-	-
Additional Expenses 3, 1000\$/yr	\$ -	-	-	-	-	-	-
Additional Expenses 4, 1000\$/yr	\$ -	-	-	-	-	-	-
Additional Expenses 5, 1000\$/yr	\$ -	-	-	-	-	-	-
Expensed Major Maintenance	\$ -	-	-	-	-	-	-
Property Taxes	\$ (697)	0	0	0	0	0	(93)
Insurance	\$ (697)	0	0	0	0	0	(93)
Sub-total Annual Deductible Operating Costs	\$ 276,156	\$ 8,181	\$ 8,751	\$ 9,313	\$ 9,937	\$ 13,306	\$ 12,475
Major Maintenance & Additions to Major Maint. Reserves	\$ (10,000)	-	-	-	-	(10,000)	-
Total Annual Operating Expenses incl. Deposits to MM Reserves	\$ 266,156	\$ 8,181	\$ 8,751	\$ 9,313	\$ 9,937	\$ 3,306	\$ 12,475
Total Working Capital	\$ 632	\$ 632	\$ 632	\$ 632	\$ 632	\$ 632	\$ 632
Balance in Major Maintenance Reserve Account	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

You May Use the Outlined Section Below for Calculations and Customization

The **orange** shaded cells indicate where input changes have occurred in the *target* file relative to the *reference* file and identify the amount and direction of the change.

- of EconExpert-WIND that contains the input data that you would like to transfer from.
- Create Values-Only Copy of the Model for Sharing with Others
From the UTILITIES MENU (or from the EconExpert Help Menu), you can create a *Values-Only* copy of the current EconExpert-WIND case. This *Values-Only* copy of EconExpert-WIND can be shared with others who may not be licensed to use EconExpert-WIND. It will not be possible to run new cases using the *Values-Only* copy, and once saved and reopened, the EconExpert-WIND Command Menu will have limited functionality (the NAVIGATE, PRINT and HELP options will be *Fully Functional*). No special license codes will be required to open and view the *Values-Only* version from any PC that has Microsoft Excel Versions 2002 or later.

Since the Sensitivity Cases and Tornado diagrams included in a *Values-Only* copy of the model will only be accurate if they are updated to the current case, you will be offered the option to run all of the model's Sensitivity Cases prior to converting the model to *Values-Only*. This may take several minutes to execute depending on the speed of your processor. The Tornado Diagrams must be individually generated. If you elect **not** to update the Sensitivities, the Sensitivity Tables, Tornado Tables, Sensitivity Graphs and Tornado Graphs can be deleted from the *Values-Only*.

Prior to executing a *Values-Only* conversion, you will be prompted with a number of Warnings, advising you to save the original spreadsheet before making the conversion, and to save the "Values-Only" file to a new filename to avoid overwriting the *Fully Functional* model.

Note that saved *Fully Functional* electronic copies of EconExpert-WIND that are not converted to *Values-Only* can be shared with others, however, those *Fully Functional* Electronic copies will not be enabled on an unlicensed computer unless the user has obtained the appropriate License Codes from CEI.

Later in this manual there is an additional discussion on saving Fully-Functional and "Values-Only" copies of EconExpert-WIND and to review the Software License Agreement included in the Appendix.

- Data Conversion Sheet (Table 1D) – Link to Annual Inputs Sheet
The Data Conversion sheet provides additional flexibility to utilize energy pricing and performance in up to 24-Periods defined by the user. Select this option to link the aggregated data in Data Conversion Sheet to the model by formula reference to the Annual Inputs Sheet.

In the Data Conversion Sheet, there are **annual** entries for:

- Hours in Each Period (this is where you enter the Period Names)
- Gross MWH Energy Production
- Curtailment Risk % (Reduction in Gross Production)
- Energy Sales for each PPA Term
- Revenue per MWH for each PPA Term

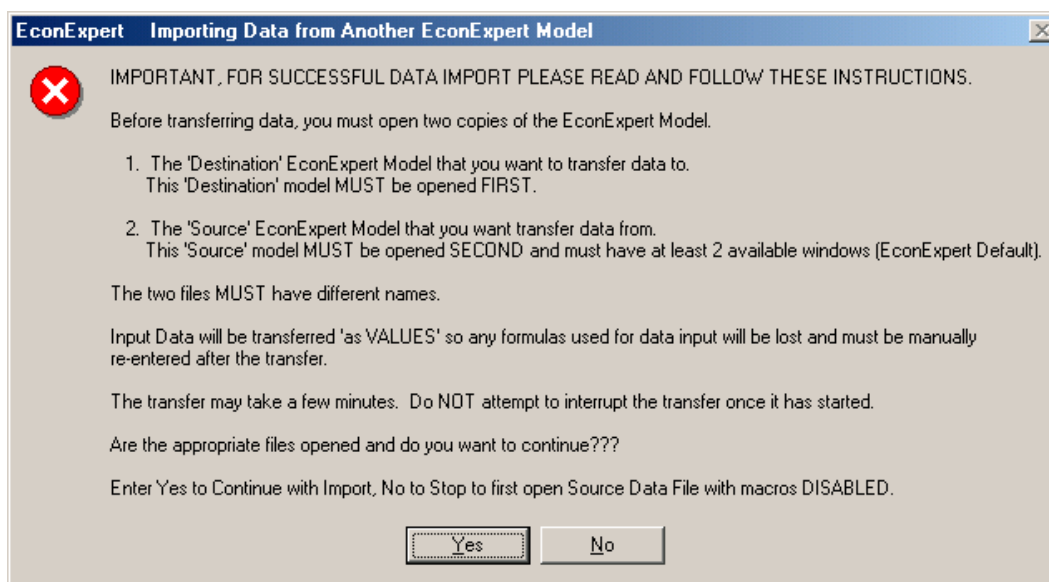
Plant Capacity and capacity factors mathematically averaged and referenced in Table 1C with formulas linked to the Data Conversion Sheet.

Input rows are unprotected and **shaded in green**. Period 24 is calculated by difference to ensure that the total number of hours in a full calendar year is equal to 8760 (note that leap years are neglected).

Please note the following points when you use this feature:

- All data is entered in Current \$.
 - Data can be copied and pasted from other sources. The pasted data should be pasted as VALUES from the source data file, or can be linked using formulas.
 - Aggregated results will be referenced by formulas in the Annual Inputs Sheet, overwriting the current Annual Inputs and overriding Global Inputs in the years that non-zero values are transferred.
 - If block period data is utilized, it is recommended that the user enter that data for the whole project life. If the data is not available for the whole project life, use formulas in the cells to project the data over the entire project life. Otherwise, where blank cells or zeros are transferred to the Annual Inputs Sheet, the Global Inputs data will be applied.
- Import Data from another EconExpert-WIND Model
 EconExpert-WIND is equipped with a utility that allows you to transfer input data from one copy of the model to another. This feature is most useful when you upgrade the model and need to easily transfer data to the new version without having to manually re-enter the data. It is also a convenient way, in combination with the Holding Bins, to consolidate models. After selecting this option, the following screen will appear:

Figure 13- Data Import Instructions



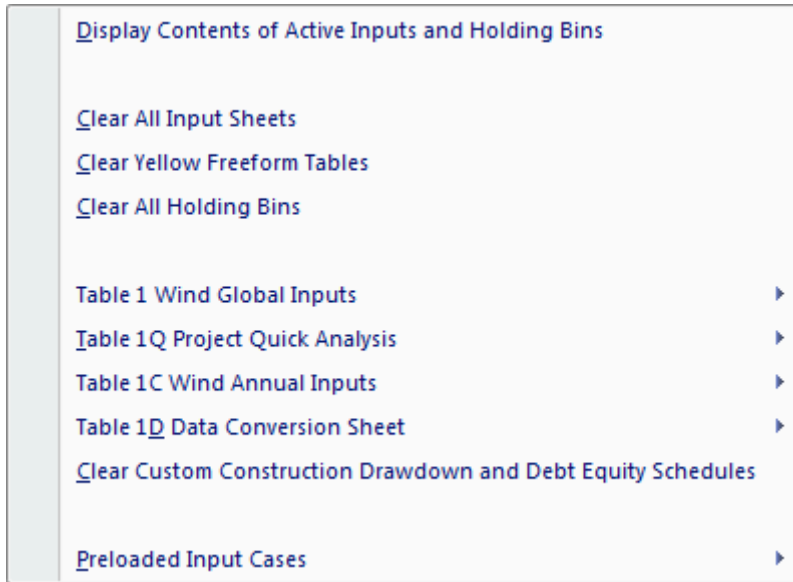
This is the complete set of instructions for data transfer. Important points include:

- Open the Destination Model first. The destination model is the new version of EconExpert-WIND that you would like to import data to.
- Open the Source Model second. This is the version of EconExpert-WIND that contains the input data that you would like to transfer from.

- Save, Exchange, Restore or Clear Inputs

This feature allows you to store the input sheets to *Holding Bins* and then to later recall those input sheets. Using this feature, you can run multiple scenarios in the same spreadsheet. The menu also allows you to load the default cases that are documented in the Appendix to this User's Manual. You can also reset/clear any Inputs Sheet, and the Custom Construction Drawdown Schedule.

Options under Save, Exchange, Restore or Clear Inputs include:



- Display Contents of Active Inputs and Holding Bins

This option allows you to view the contents of the various Holding Bins described below.

NOTE The contents of the *Global and Annual Input Sheet* Holding Bins are also displayed at the top of *Table 1 - Global Inputs*. The Holding Bins are used to store copies of the input sheets. Whenever you file a copy of an Input Sheet to a Holding Bin, you will be prompted to name the sheet you are saving. That name will appear in the description cell located at the top of each sheet and will appear in the window that is generated when you select this option.

An example of the window that EconExpert-WIND creates to inform you about the current contents of the Holding Bins is provided below:

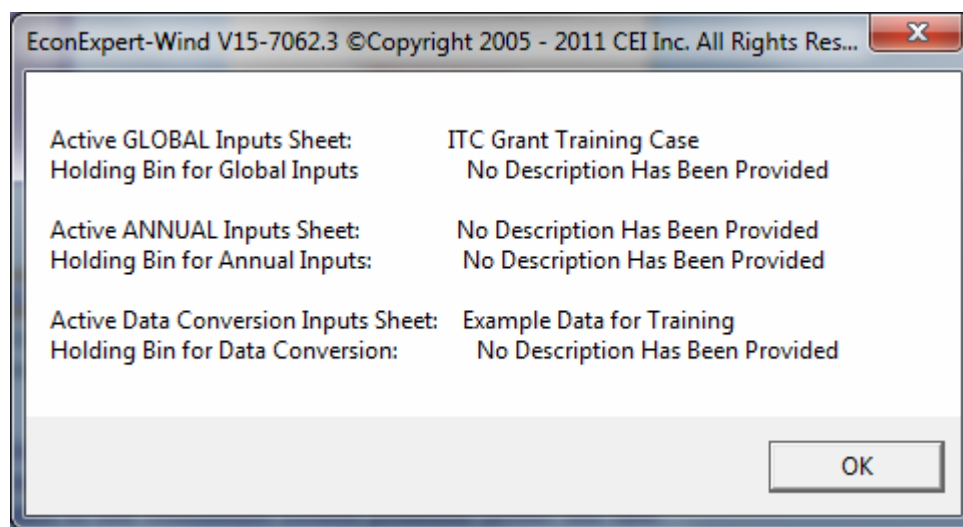


Figure 14 - Example Display of Current Contents of Holding Bins

- Clear all Input Sheets
Select this to clear the contents of the input sheets.
- Clear Yellow Freeform Tables
Select this to clear the contents of the yellow freeform tables.
- Clear all Holding Bins
Select this to start a completely new case.

For each of the input sheets you are given the following four options:

- Save
This option saves a copy of the active Input Table to a Holding Bin. When you save the contents to the Holding Bin, the current contents of the Holding Bin are *overwritten*.
- Exchange
This option exchanges a copy of the active Input Table with a copy saved in the Holding Bin. It allows you to flip the copies of input tables that have been previously saved with the active Input Sheet. When you exchange the contents with a Holding Bin, the current contents of the active Input Sheet are saved in the Holding Bin and the current contents of the Holding Bin are written to the active Input Sheet. Neither is lost.
- Restore
This option restores a copy of Input Table that had been previously saved to a Holding Bin. This option allows you to recover the copy of input table that had been previously saved. When you restore the contents from a Holding Bin, the current contents of the active Input Sheet are *overwritten*.
- Clear
This option clears the Input sheet. This option clears the Inputs Sheet of virtually all inputs allowing you to restart with a fresh analysis.

In addition to processing the Global, Annual and Data Conversion Sheets, this menu also allows you to:

- CLEAR the Custom Construction Drawdown and Debt-Equity Schedules
Any inputs to a custom drawdown and debt equity schedules will be cleared and the default S-Curve Drawdown that EconExpert-WIND automatically calculates to match your construction period will be restored.
 - Preloaded Input Cases
This option resets the model the initial configuration with some preset values.
 - Set-up Model in 'Quick Project Analysis Format'
 - Once you select this option, Table 1Q is linked into the rest of the model. You can run sensitivities and also modify the other inputs sheets to enhance your analysis.
 - Formula Auditing
Since the sheets in EconExpert-WIND are protected, you will not be able to use the *Audit* feature on the Excel Tools menu. By double clicking on any cell in the model you can bring up the formula auditor. This option is also added to the EconExpert-WIND UTILITIES Menu and on the Right Click feature in the spreadsheets, allowing you to use the Excel Trace Functions to determine which cells in the model provide source data for any cell of interest, and which cells in the model depend on that cell.
 - Help Comments in Cells
You can turn on or off the Help comments that are provided throughout the model. The Help comments are described in more detail in the next section.
 - Link Management
This option enables you to break all the current links in the workbook.
 - Locking of Input Cells and Protection of Graphs/1 Page Summary
This option allows you to turn ON or OFF the Range Protection for the Project Summary and the eight Graph Sheets. This feature can be used to customize or enhance the model's preprogrammed graphs, or to add new graphs to the model. Unfortunately, as various cases are run in any Excel model the formatting of graphs can change in ways that may not be desirable. This is an acknowledged bug in Microsoft Excel. If the formatting of the graph is disrupted, it can be easily corrected by first turning OFF the range protection and then simply clicking on the graph to make the desired changes. After completing the corrections it is recommended that you turn the protection back ON. For Help on formatting graphs in Excel, see the Excel Help Menu and perform a search for *Charts*.
- NOTE** When a graph is selected, the EconExpert-WIND Command Menu will disappear. The Menu will reappear when the selected graph is closed. The graph can be closed by clicking on any cell in the model.
- Temporarily Change Company Name on Reports
You can temporarily change the name of the company that will appear in the reports that are generated from the EconExpert-WIND menu. When you reinitialize the model, the name will be reset to the default value that the model is registered to.

- Table Viewing and Formatting

Selecting this option will allow you to change the format of the Tables in the model. The options include:

- Freeze and Unfreeze Panes

Freezing titles allows you to set the header rows and columns of all tables in the model so that the row and column titles will remain on the screen as you scroll down or across the individual tables. You can also unfreeze the titles for all tables in the model.

- Since most of the worksheets in EconExpert-WIND are protected, you will not be able to change the cell formats from the Excel menu, but this option has been added to the UTILITIES Menu, allowing you to change the format of selected cells in the model. You can selectively change the number format, shading, font color, font type, underline, borders or column width of tables and cells in the model.

- The following options allow you to change the cell formats:

- Number Format
 - Underline, Bold and Italics
 - Font Color
 - Borders
 - Change Column Width

- Shading

You can toggle the format of Inputs Cells in Tables 1 and 1C between **Shaded** and **Bold Italics**. The default status of unprotected Input Cells in Tables 1 and 1C is **Shaded**, allowing you to easily differentiate between protected formula cells and unprotected input cells in the model. Since shaded entries may be difficult to read if they are copied or faxed, you can use this option to select the preferred format.

- Restore Original Formats to Input Tables

No matter what changes you make to the Input Tables, you can always select this option to restore the model to its initial formats.

- Zoom Settings

EconExpert-WIND is equipped with a Command Menu module that allows you to optimize the appearance of the model on your computer monitor based on the Windows Display Settings that you have selected and the type of monitor that you have. The basic Zoom formats in EconExpert-WIND are 40%, 50%, 75% or 100%, though when selecting each of these settings some worksheets may be formatted to a slightly different Zoom Setting for optimal appearance.

NOTE For the recommended Windows Display setting of 1024 x 767 Pixels, 50% is the recommended Zoom format EconExpert-WIND. If you have a lower resolution monitor and use a setting of 800 x 600 Pixels, the recommended Zoom Setting in EconExpert-WIND is 40%.
--

You can check your Windows Display Settings in Windows by selecting *Start>Settings>Control Panel Display>Settings*.

Zoom settings of 75% and 100% are also provided in the event that you would prefer to see a larger print format. This might be desirable if you are displaying results using a digital projector.

To change the Zoom Setting from EconExpert-WIND select *UTILITIES>Table Viewing and Format>Set Table Zoom*.

Help

EconExpert-WIND offers four On-Line Help Features:

- The EconExpert Help Menu
- Comments posted in individual cells throughout the model, providing descriptions of the functions of individual inputs and overviews of tables provided in the model
- The EconExpert-WIND Tutorial
- This User's Manual

The EconExpert Help Menu

EconExpert-WIND is equipped with a Customized Help Menu to assist you in using the model. The menu provides other instructions and Helpful hints on using the model, technical definitions, and access to special features of the model. Items on the EconExpert Help Menu include:

- Tutorial
The EconExpert-WIND On-Line Tutorial will walk you through the model and all of its important features
- Input Tables
Descriptions of the functions of Table 1 Global Inputs and Table 1C Annual Inputs
- Worksheet Tables
Descriptions of the purpose and functions of each of the 26 Worksheets included in EconExpert-WIND
- Command Menus
Descriptions of the purpose and functions of each of the options provided on the EconExpert-WIND Command Menu
- Customizing the Proforma
Helpful suggestions on how you can customize EconExpert-WIND to perform “project specific” analyses
- Definitions and Explanations
Helpful definitions for items throughout the model
- Populate Table 1C with links to Data Conversion Sheet
As described in the Utilities section
- Comparing Runs and Identifying/Quantifying Changes
As described in the Utilities section
- Saving EconExpert-WIND to Disk
Discussion how to save and reuse *Fully Functional* and *Values-Only* copies of EconExpert-WIND
- Help Comments in Worksheet Cells
A discussion of the Help Comments provided in worksheet cells, and how to enable or disable the Cell Comments feature

Help Comments

Individual input cells throughout the EconExpert-WIND model include Comments that provide information about the purpose and function of the respective input cell or results table. Cell Comments can be turned ON or turned OFF from the EconExpert-WIND UTILITIES Menu.

NOTE If the Cell Comments feature is turned ON, a *red triangle* comment indicator will appear in the upper right corner of the affected cells in the model. The corresponding Help Comment will appear as you move the cursor near to or over the *red triangle*.

Worksheet Tabs

Tabs at the bottom of the spreadsheet identify the various worksheets and tables in the EconExpert-WIND model. Worksheets are organized into the following categories:

- Administrative
- Summaries
- Inputs
- Reports
- Graphs

Administrative Sheets

These sheets provide the user information about the model, holding bins, and other information that support the use of the model.

License

The License Sheet provides the Software License Agreement. EconExpert-WIND may only be used under the terms of the applicable License Agreement and the user must acknowledge their acceptance of those terms in order to enable the model. The terms of the software license should be read carefully BEFORE using the model.

NOTE Prior to the first use of the model the user must accept the license agreement by clicking on the button labeled *"I Have Read and Accept to the Terms of the EconExpert-WIND License"*, located at the end of the License Agreement.

Title

The Title Sheet includes the EconExpert-WIND and CEI Logos, and notification of the product copyright. Contact information for CEI is also provided. The Macro Button on the top of this sheet will take the user to the Global Inputs sheet.

Status

The Status Sheet provides Alerts and Warnings to the User that are relevant to the current configuration of the model. Warnings include detection of potentially conflicting inputs (e.g. a specified loan term that is longer than the project life), special circumstances and notification that Annual Inputs to Table 1C will produce results that will override or will be added to results otherwise generated from corresponding inputs to Table 1.

NOTE It is highly recommended that the user check this sheet prior to reporting final results to help insure that the current case has been modeled correctly.

Summary Sheets

These sheets provide a couple different summary views of the project.

Project Summary

This sheet provides a 1-page summary of key project parameters. The figure below provides a screen shot of the Project Summary Sheet.

- IRR Summary
- NPV Summary
- Project Operating Parameters
- Project Schedule
- Investment Costs
- Energy Pricing
- Sources and Uses of Operating Funds in \$/MWH

The user is free to modify and customize this summary and it can be extracted to any other application including another Excel Workbook or MS Word. To unprotect and modify the Summary sheet, select *UTILITIES> Range Protection of Graphs and Project Summary Sheets*.

You may then modify the sheet, change entries, add or delete rows, etc., tying formulas in the table to other cells throughout the model. As long as you do not make changes outside of the boxed section of the sheet, the resulting summary that you create can be reported using the PRINT option on the Command Menu.

Table 2 Summary

Table 2 provides consolidated summaries of the results generated in Tables 3 - 11. Table 2 is organized as follows:

- Top Section - Basic Summary
 - Unleveraged and Leveraged Annual NPVs and IRRs
 - Return on Equity
 - Debt Coverage Ratios
- Bottom Section - Expanded Summary
 - Construction Expenditures
 - Revenues
 - Expenses
 - Debt Service
 - Taxes
 - Leveraged Cash Flow
 - Operating Cash Flow Breakdown
 - Unleveraged Cash Flow

Input Sheets

These sheets contain all the possible inputs for this model. A more detailed description of the inputting process is discussed later in this manual.

Table 1Q Quick Project Analysis

This table is used to quickly analyze a wind power project, by only focusing on set of economic inputs to model a project. Simply entering values on this table is insufficient to perform a quick analysis. The user must go to the Utilities menu, and select

Table 1 Wind Global Inputs

- Table 1 is where Global Inputs are entered. Global Inputs are premises that typically apply over the life of the project, or input values that are escalated at a constant rate over the life of the project.
- Inputs to Table 1 are organized into categories of inputs that can be located using the NAVIGATE Menu, by scrolling through the Table, or by using the Global Inputs Wizard. Table 1 is Range Protected, allowing you to enter data ONLY into specified green shaded input cells.
- The individual Global Inputs are discussed in more detail later in this manual. The Appendix also provides examples on how to use the various Global Inputs. A variety of Cell Help Comments also appear with each input in Table 1.

Table 1C Annual Inputs

- Annual Inputs apply only to a given year in the life of the project, but there are entries for every year of the project. Use Annual Inputs in the case where the economic item is going to vary year to year – and not in a fixed manner like a straight escalation.
- The individual Annual Inputs are discussed in more detail later in this manual. Examples provided in the Appendix also give examples on how to use the various Global Inputs. A variety of Cell Help Comments also appear with each input in Table 1.

NOTE Cost entries are inputs to Table 1C in CURRENT \$, and represent the actual amount spent in a given year. This means that the cost and revenue entries to Table 1C will not be impacted by escalation rates entered elsewhere in the model, and fixed values will not be impacted by partial year operation. The values will be used by the model as entered.

Table 1D - Data Conversion

The Data Conversion Sheet allows the user automatically to convert forward energy data provided in a format that is different from EconExpert-WIND, to the format of four Energy and two Fuel Pricing periods used in the EconExpert-WIND model. The current version of the model is equipped with the capability to automatically reference aggregated forward data entered into 1 - 24 block periods / year to the Annual Inputs sheet.

Report Sheets

Each of these sheets contains the calculations and outputs for the described areas.

Table 3 Construction

Table 3 provides calculations of monthly and cumulative monthly construction expenditures based on a standard S-Curve Drawdown schedule and the Debt/Equity ratios specified in Table 1. Interest during construction and soft costs (Start-up/mobilization/spares, working capital, debt reserve, and up-front loan fees, etc.) are also allocated over the construction term.

As an alternative to the Default "S-Curve" Capital Cost Drawdown Schedule generated by EconExpert-WIND and to a constant Debt/Equity schedule during the drawdown period, you may input your own custom Capital Cost Drawdown and/or Debt Equity Schedules by entering the percentage of Capital Costs that are expended monthly during the Construction Phase and the percentage of project costs covered by equity in each month.

NOTE Non-zero entries to this schedule will override the default values, in the months that they are entered. Since the resulting drawdown schedule must sum to 100%, it is recommended that you provide the complete drawdown schedule if custom drawdown entries are made. A warning will be issued if the resulting drawdown schedule does not sum to 100%.

Table 3 is organized as follows:

- Construction Drawdown and Financing Schedule
- Monthly Construction Cost Schedule
- Cumulative Monthly Construction Cost Schedule

The total monthly drawdown during the construction phase is computed as follows:

- Land and Development Costs (which may actually occur prior to closing) are scheduled as a *one-time* expense, lumped in the first month of the construction phase.
- Capital Costs and Loan Commitment Fees are expended according to the Drawdown Schedule.
- Start-up, Mobilization and Spares costs are spread evenly over the last six months of the Construction Schedule. If the Schedule is shorter than six months they are divided evenly over the period.
- Working Capital is accumulated over the last three months of the Construction Schedule. If the Schedule is shorter than three months they are divided evenly over the period.
- Debt Reserves are deposited in the last month of the schedule.
- Interest During Construction is calculated and added to other construction term costs based on the percent of construction costs that are debt financed, using the Construction Term Debt parameters, and the resulting monthly expenditures described above.
- Loan Commitment Fees are based on the monthly "undrawn" balance.
- Vendor Letter of Credit Admin Fee is based on the schedule on Table 3 below the Monthly Schedule and above the Cumulative Construction Schedule

Table 4 Operating Costs

Table 4 provides calculations of all operating expenses and related escalation factors. Escalated annual fixed and variable operating expenses are computed in \$1,000/yr, based on inputs to Tables 1 and 1C. Table 4 is organized as follows:

- The top Section
 - Partial year adjustments
 - Escalation rates
 - Calculations for operating expense items
- The bottom Section
 - Accounts Payables and Receivables
 - Operating Costs
 - Balance Sheet items including Working Capital contributions, Spare Parts Purchases, and O&M Reserve contributions
 - Working Capital and O&M Reserve Account balances

Itemized operating cost categories provided in Table 4A include:

- Variable Cost O&M 1-2
- Fixed O&M Cost 1 - 3
- Other O&M Cost 1 – 4
- Consumption of Spare Parts
- Land Lease and Developer Lease Payments
- User Defined Variable O&M 1-3
- Property Taxes and Insurance

Table 5 Debt Service

Table 5 provides detailed calculations of principal and interest payments on primary and subordinated debt. Debt Terms entered in Tables 1 and 1C are reported and resulting annual debt service requirements are calculated and displayed. Debt Coverage Ratios are also reported.

Table 5 is organized as follows:

- The top section of Table 5 provides the factors used for the Debt Service calculations.
 - Custom Debt Treatment - Accelerated Principal Payments, Interest Only Payments
 - Schedules - Breakdown of Interest Rates, Interest Payments, Principal Repayments, Etc.
- Table 5A located on the bottom section of Table 5 provides Annual Debt Service Expenses in 1000\$.
 - Annual Debt Service Payments
 - Interest Payments
 - Principal Payments
 - Cash Available to Cover Debt
 - Debt Coverage Ratios

Table 6 Revenues

Table 6 provides calculation of gross revenues associated with electric sales. Table 6 is organized as follows:

- The Top Section of Table 6 provides Revenue Factors and Escalation Rates including:
 - The Energy Sales Profile by Energy Pricing Period
 - Sales of Other Commodities including steam and other byproducts

- Escalation Rates used for Revenues
 - Escalated Prices for Energy and Commodities
- Table 6A located in the bottom section of Table 6 provides Escalated Annual Revenues in 1000\$, based on the Owner's Percentage Interest in the project. Revenue streams are itemized in detail. If less than 100% Ownership has been specified as an input, the revenues shown here will be prorated based on the Owner's Share of the total project.

Itemized revenue categories provided in Table 6A include:

- A breakdown of revenues from energy sales into the available four Energy Pricing Periods
 - Period 1A
 - Period 1B
 - Period 2A
 - Period 2B
- A breakdown of all taxable revenue sources including:
 - Total Energy Sales (Sum of 1A, 1B, 2A and 2B above)
 - Capacity / Ancillary Services Payments
 - Other Annual Revenue (from Table 1C Annual Inputs)
 - Steam Sales
 - Other By-Product Sales
 - Other Energy Sales
 - Interest Income from Maintenance and Debt Reserves
- Other sources of revenue associated with liquidation of reserves and disposition of the land and asset at the end of the debt term or the end of the project life.

Table 7 Cash Flow Leveraged

Table 7 provides calculations of the net cash flow before-tax, income taxes and net cash flow after-tax. Results provided in this table are calculated on a Leveraged basis (i.e. including construction phase and operating phase debt). The resulting Cash Flow is reported during the construction phase and through the operating phase. Calculations of revenues minus expenses, Depreciation and taxes, are provided to be used in the calculations of Net Present Value (NPV) and Internal Rate of Return (IRR) provided in Table 8.

Results in Table 7 are expressed based on the Owner's percentage interest in the project.

Table 7A Cash Flow Unleveraged

Table 7A provides calculations of the net cash flow before-tax, income taxes and net cash flow after-tax. Results provided in this table are calculated on an unleveraged basis (i.e. Assuming the project is executed with 100% equity and with no debt during either the construction or operations phases). The resulting cash flow is reported during the construction phase and through the operating phase. Calculations of revenues minus expenses, Depreciation and taxes are provided to be used in the calculations of Net Present Value (NPV) and Internal Rate of Return (IRR) provided in Table 8A.

NOTE The calculated unleveraged IRR may change slightly (usually by less than 0.1%) as a function of changes in project equity. This can occur when you select the “Factor” option for calculating property taxes or insurance costs, which when carried through to the unleveraged analysis are tied to the cost basis, which in turn has a small dependency on the amount of debt assumed. This effect is very minor and will not be observed if either annual inputs or a fixed 1000\$/yr amount is entered for Property Taxes and Insurance costs.

Results in Table 7A are expressed based on the Owner’s percentage interest in the project.

Table 8 NPV & IRR Leveraged

Table 8 provides calculation of the Net Present Value (NPV) and Internal Rate of Return (IRR) on a Leveraged Basis using results from Table 7.

The IRR represents the after-tax return on the Owner’s investment. The NPV is calculated at the specified Discount Rate. A negative NPV does not necessarily indicate that a project is losing money, but rather that the IRR achieved by the project is less than the discount rate specified for the NPV calculation. An NPV of 0 means that the IRR and Discount Rate are equal.

The Debt Service Coverage Ratios (DSCR) from the debt sheet is reported. DSCR is a common metric used by banks and financing institutions to measure project performance versus debt obligations. DSCR’s are provided on a both a before-tax and an after-tax basis. Debt Coverage Ratio (Before-Tax) is defined as the Earnings Before Interest, Taxes and Depreciation (EBITAD) divided by the debt service payment and the fees on the Senior Debt. The Coverage Ratio after-tax on the Senior Debt is defined as the net cash flow after-tax available to cover debt divided by the debt service payment and the fees on the Senior Debt.

Results in Table 8 are expressed based on the Owner’s percentage interest in the project.

Table 8A NPV & IRR Unleveraged

Table 8A provides calculation of the Net Present Value (NPV) and Internal Rate of Return (IRR) on an unleveraged basis using results from Table 7A.

The IRR represents the after-tax return on the investment. The NPV is calculated at the specified Discount Rate. A negative NPV does not necessarily indicate that a project is losing money, but rather that the IRR achieved by the project is less than the discount rate specified for the NPV calculation. *An NPV of 0 means that the IRR and Discount Rate are equal.*

NOTE The calculated unleveraged IRR may change slightly (usually by less than 0.1%) as a function of changes in project equity. This can occur when you select the “Factor” option for calculating Property Taxes or Insurance costs, which when carried through to the unleveraged analysis are tied to the cost basis, which in turn has a small dependency on the amount of debt assumed. This effect is very minor and will not be observed if either annual inputs or a fixed 1000\$/yr amount is entered for Property Taxes and Insurance costs.

Results in Table 8A are expressed based on the Owner’s percentage interest in the project.

Table 9 Sources and Uses

Table 9 provides an analysis of the Sources of Funds and the Uses of Funds (in 1000\$) during the construction period and during the operations phase of the project. Sources and Uses of

funds are balanced in each year. A complementary Sources and Uses calculation during the operations phase is provided in Table 12 where results are expressed in \$/MWH.

Results in Table 9 are expressed based on the Owner's percentage interest in the project.

Table 10 Major Maintenance

Table 10 provides calculations of Periodic, Capitalized and Expensed Major Maintenance Costs. The balance accumulated in the Major Maintenance Reserve account is also calculated. Major Maintenance Reserves are applied to Periodic Major Maintenance Expenses in years when Major Outages have been scheduled. Periodic and Capitalized Major Maintenance Costs are depreciated for Book and for Cash Purposes.

Expensed Major Maintenance Costs are treated in the same manner as are Fixed Operating Expenses.

Table 11 Financials

Table 11 provides the Project's Financial Statements including the Income Statement, Cash Flow Statement and Balance Sheet based on the Owner's percentage interest in the project. The predicted Owner's Stock Performance, with and without the project, is also estimated.

Table 11 is organized as follows:

- Table 11 Income Statement
The Income Statement is used to calculate Net Income (revenues minus expenses, Depreciation and taxes) for the project, using GAAP Book Accounting Methods.
- Table 11A - Cash Flow Statement
The Cash Flow Statement identifies sources of project cash and amounts available for potential distribution to the Owner.
- Table 11B - Balance Sheet
The Balance Sheet identifies assets, equity and liabilities attributed to the project, where Total Annual Assets are in balance with Total Annual Equity and Liabilities in each year and over the project life.
- Table 11C - Owner's Stock Performance
Predictions of the impacts of the project on the Owner's stock price are provided based on the project's Net Income, the dilution effects of the equity additions attributed to the project, and the predicted performance of the Owner's stock without the project.

Results in Table 11, 11A, 11B and 11C are all expressed based on the Owner's percentage interest in the project. EconExpert uses the *Deferral Method* of Generally Accepted Accounting Principles (GAAP) for all Book Analyses including the Income Statement, Cash Flow Statement and Balance Sheet in Table 11.

Table 12 Dollars per MWH

Table 12 provides costs and revenues calculated in \$/MWH during the operations phase. These calculations are performed by dividing the annual revenues and expenses by the net annual power generation. Table 12 includes the following expressed in Escalated (Current) \$/MWH:

- Revenues by category including energy sales, capacity sales and other revenues sources.
- Operating Costs by category including individual contributions to fixed and variable operating costs.

- Debt Service Expenses including a breakdown of Primary and Subordinated Debt payments.
- Sources of Funds including revenues from energy sales, capacity sales and other income sources.
- Uses of Funds including identification of net income after-tax.
- A Summary Breakdown of Revenues, Expenses, Debt Service, Income Taxes and Net Income.

Table 13 Depreciation

Table 13 provides calculations of Depreciation for Cash and for Book Purposes. Depreciation is used to recover investment costs for items that have multi-year lives including the initial Capital Investment and Major Maintenance Expenses that occur during the life of the project.

Table 13 includes the following:

- Depreciation for Tax - Initial Capital Investment - IRS Modified Accelerated Cost Recovery (MACRS) Schedules and State and Federal Bonus Depreciation.
- Depreciation for Tax - Major Maintenance
 - Periodic Major Maintenance Expenses - using the Major Maintenance Frequency defined in Table 1.
 - Other Capital Improvements - Four schedules are provided in Table 1C that allow the user to input additional Capitalized Major Maintenance Expenses using Depreciation lives of 5, 10, 15 or 20 years.
- Depreciation for Book - Initial Investment and Major Maintenance
 - The Initial Capital Investment, Periodic Major Maintenance Expenses, and Other Capital Improvements are depreciated using the Straight-Line methods specified in Tables 1 and 1C.

Sensitivities

The Sensitivities Sheet is where Sensitivity Analyses and Tornado Diagrams are generated to study the impacts of variations of key project parameters on the calculated IRR and NPV. The Sensitivities Sheet contains a series of tables, each of which are used for a respective Sensitivity Analysis or Tornado Diagram. The user may specify individual increment amounts to be applied to each of the respective sensitivities. The IRR Term used for the Sensitivity Studies is entered in the IRR Summary Section at the top of Table 1.

Additional discussion of how to use EconExpert-WIND's automated Sensitivity Features is provided later in this manual.

Graphs Sheets

Additional Charts accompanying EconExpert-WIND are provided in the Sensitivity Charts file which accompanies the model. If saved into your C:/EconExpert-Files folder these charts will be automatically accessed when the corresponding sensitivity is executed.

Graphs Sensitivity 1 - 4

Four worksheets in EconExpert-WIND provide plots showing results of Sensitivity Analyses to study how the IRR of a project will be impacted by incrementing individual inputs to the model. The corresponding Sensitivity Cases must be executed from the EconExpert-WIND Command Menu in order to reflect results consistent with the current case. The Sensitivity Increment for each case is entered in the respective tables that appear for each variable in the Sensitivity Sheet. The term used for all of the Sensitivity Analyses is entered at the top of Table 1. The Sensitivity Graphs provide plots of Leveraged and unleveraged IRR versus the variations in the selected parameter.

IMPORTANT The Sensitivity Graphs are not updated automatically. Prior to printing the Sensitivity Graphs, they must be updated by running the corresponding Sensitivity Analysis for the current case. This can be accomplished by selecting the SENSITIVITIES option on the EconExpert-WIND Command Menu. All of the Sensitivities can be run as a batch from the EconExpert-WIND SENSITIVITIES menu.

EconExpert-Wind Charts (Tornado and Parametric Sensitivity Charts)

One worksheet in EconExpert-WIND provides plots showing all of the respective Tornado Diagrams used to study how the IRR of a project will be impacted by incrementing multiple project inputs. The corresponding Tornado Diagrams must be executed from the EconExpert-WIND Command Menu in order to reflect results consistent with the current case. The Increments are entered into a Data Input Sheet provided by EconExpert-WIND when you select the respective Tornado Diagram Option from the Command Menu. The term used for all of the Tornado Diagrams is entered at the top of Table 1. The Tornado Diagrams provide plots of leveraged and unleveraged IRR versus the variations in the selected parameter.

IMPORTANT The Tornado Diagrams are not updated automatically. Prior to printing the Tornado Diagrams, they must be updated by running the corresponding Tornado Diagrams for the current case. This can be accomplished by selecting the SENSITIVITIES Option on the EconExpert-WIND Command Menu. Each of the Tornado Diagrams must be individually generated.

Inputs to the EconExpert-WIND model

There are four input sheets representing the various approaches that can be used to input data into the EconExpert-WIND model:

- **Table 1 Wind Global Inputs**
This is the main input sheet for the model. It allows you to enter values that typically apply (and may escalate at a constant rate) over the life of the project.
- **Table 1C Annual Inputs**
This sheet allows the user to customize the behavior of inputs or to introduce new categories of inputs into the model. The results calculated from these annual entries will either override or will be added to amounts calculated from Inputs to Table 1 Global Inputs.
- **Table 1D - Data Conversion Sheet**
This sheet provides inputs that can be divided into up to twenty four periods of your own design in this sheet. The resulting calculations can then be automatically referenced by formulas in the Annual Inputs Sheet producing a proforma that fully evaluates multi-period inputs. This sheet is not active unless you direct the model to use it by referencing this sheet using the *populate* option on the UTILITIES menu.
- **Table 1Q – Quick Project Analysis**
This sheet can be used to quickly analyze a wind power project, by only focusing on set of economic inputs to model a project. Simply entering values on this table is insufficient to perform a quick analysis. The user must go to the Utilities menu, and select

A wide range of project specific conditions can be easily and accurately modeled using this powerful combination of inputs sheets. Descriptions and functions of the individual inputs are provided in Help Comments included with each input cell. Additional discussion of the individual inputs sheets follows, and the Example Cases in the Appendix also provide examples of using the inputs sheets.

Table 1 Wind Global Inputs

Table 1 Wind Global Inputs are premises that typically apply over the life of the project, or input values that are escalated at a constant rate over the life of the project. Global Inputs include a complete check list of the typical factors modeled in a power project. Inputs to Table 1 are organized into categories of inputs that can be located using the NAVIGATE Menu or by scrolling through the Table. Table 1 is Range Protected, allowing you to enter data ONLY into specified (shaded green) input cells. Table 1 is organized into sections associated with the various classes of inputs.

Figure 15 - Table 1 Wind Global Input Categories

Column 1	Column 2	Column 3	Column 4
Schedule and Production	Revenues and Operating Expense	Investment Costs	Project Financing
▪ Project Schedule ▪ Turbine and Wind Farm Gross Capacity ▪ Wind Rating Profile ▪ Compounded Efficiency Losses and Net Capacity ▪ Economic Factors ▪ Taxes and Investment Tax Credits ▪ Owner's Stock Performance	▪ PPA Pricing Summaries ▪ Other Revenues ▪ Production Tax Credits ▪ Operating Expenses ▪ Developer Royalty ▪ Land Lease Royalty ▪ Property Tax and Insurance	▪ Phase 1 - Project Development ▪ Phase 2 - Engineering, Construction and Start-up ▪ Soft Costs ▪ Plant Residual Value	▪ Construction Financing ▪ Permanent Financing ▪ Senior Debt Structure ▪ Subordinated Debt Structure ▪ Sources of Capital Summary ▪ Depreciation ▪ Income Taxes and Investment Tax Credits ▪ Property Taxes and Insurance

Please note that inputs to Table 1 are in BASE YEAR dollars. This means that the cost and revenue entries to Table 1 will be escalated by the respective compounding of the GNP Deflator and the Real Escalation applied to each item, even if the cost or revenue does not start until a later year in the project. All results calculated using the Global Inputs Sheet will be prorated based on partial years of operation in the first and last years of the project life, as appropriate.

A red asterisk (*) identifies cells where a potential warning message is located.

Also note that when inputs are entered in Table 1C Annual Inputs that override a particular entry to Table 1 Wind Global Inputs, the cell format in Table 1 will change to **bold red** and an **annual input** indicator will appear next to the respective input. This feature is provided just to advise you that a particular input to Table 1 is being overridden somewhere else in the proforma.

NOTE Appendix also provides examples on how to use the various Global Inputs. A variety of cell Help Comments also appear with each input in Table 1. To view the comments first enable them from the EconExpert Help Menu and then place the cursor over the *red triangle* on the corner of the respective cell.

Schedule and Production

Project Schedule

The first section at the top left of Table 1 is the Project Schedule, where the user specifies the start of the project (Financial Closing Date), the duration of the installation (Construction Term), and the Project Life. In addition, in the section the user can segment the project life into multiple terms, specifically for PPA or different revenue pricing.

If the Project Life is shorter than the debt term or an applicable depreciation life than the residual principal balance and depreciation will be accelerated in the final year of operations. Other items such as Land Value and Working Capital are also recovered at the end of the Project Life. Tables throughout the model will show results over the resulting Project Life and columns after the end of the Project Life will show 0 at the top of the column indicating that the project is inactive during that period.

Figure 16 - Table 1 Wind Global Inputs – Taxes and Investment Tax Credits

Schedule and Production					
<u>Project Schedule</u>					
Financial Closing Date	04/01/06	MMDD/YY			
Construction Term, mos (0 - 48)	8	Months			
Commercial Operation Start Date	12/01/06				
Project Life, Years (32 Max)	25	Years			
Retirement Date	12/01/31				
<u>PPA Schedule</u>					
PPA Start Date	12/01/06				
	Term Name	Years	From	To	
Term 1	Contract Term	20	12/1/2006		11/30/2026
Term 2	Second Term	5	12/1/2026		11/30/2031
Term 3	Third Term	0			
Total Potential Term of PPA		25			

If the Start of Operations results in part year operations in the first year, costs in the first and last year of the project life will be prorated based on the percent of the year that the plant is in service.

Turbine and Wind Farm Capacity

The next section down is where the user enters the number of turbines and the rated capacity for each turbine. The model can accept up to two turbine models.

Wind Rating Profile / Annual Energy Production

The model offers up to six (6) entries for gross energy production. This model starts with electric generation, and assumes that the wind farm modeling has been done already, or that the user has already estimated generation amounts. The section accepts entries for six (6) defined Wind Rating levels (P50, P60, P75, P90, P95, and P99). The user can enter generation values in MWh in one or any of the associated entry cells. If the user only has one generation amount that they want to model, they can enter that amount in any of the green cell, and simply select the radio button next to the green entry cell.

This section is structured to allow the user to quickly run scenario analyzes for various wind profiles, by simply clicking on the radio buttons and monitoring the impacts on project returns. In addition there is a special Sensitivity graph just for comparing project economics based on the wind profile inputs.

A couple of the lines below the entry cells could use some defining, and these definitions continue in the next section.

- Annual Gross Energy Production
The generation inputted above, before any losses from the section below are subtracted.
- Energy Production After Array Losses
The generation minus the losses specified in cell D123 – Wind park Efficiency Loss.

- **Energy Production After ALL Losses**
The generation minus all losses that total to cell D142, which includes the array loss and all losses above line 142.
- **Net Energy Produced**
The generation after All Losses and adjustments for the Curtailment Risk and Availability Factor

Compounded Efficiency Losses and Net Capacity

The inputs for this section are used to degrade the generation amount specified in the above section. Each line item has a definition in the Help Comments for that cell. Below the inputs, the Capacity and Capacity Factors are shown for each of the different levels specified above – Gross Capacity, Capacity after Array Losses, and Capacity After All Losses and Risks. The Plant Capacity Factor is the percentage of potential annual generation that is produced over the year. So, a capacity factor of 80% means that the net annual MWH sold from the facility is 80% of the plant's generating capacity times 8760 hours / year.

As the Curtailment Risk and Availability Factor do not really reduced Capacity, there is not a capacity factor calculated after those losses are accounted for.

Economic Factors

This section captures the escalation rates and discount factors that determines the base rates throughout the model. Inputs here include:

- **Base Year** - The time frame from which all escalation calculations will be performed. Operating Cost and Revenue inputs to Table 1 are expressed in Base Year \$ and will be escalated to the current year by compounding the Real Escalation Rate assigned to that component with the GNP Escalation Rate described below.
- **GNP Escalation Rate** - The life-of-project rate of general inflation. Each cost or revenue input in Table 1 also includes a Real escalation entry, which when added to the GNP Escalation Rate provides the effective rate of escalation for that input. If the rate of escalation for an input is equal to the GNP Escalation Rate, that input's Real Escalation Rate would be 0.0%. If an input escalates at a rate higher than inflation, its Real Escalation Rate would be greater than 0.0%, and similarly it would be negative if the input escalates at a rate lower than the general inflation rate.
- **Discount Rates** - Used for NPV Calculations, on a leveraged and an unleveraged basis. These are the rates used in Tables 8A and 8B for calculating the Net Present Value of the project discounted to the year of financial closing. They are normally the cost of capital for the corporation.
- **Interest Rate Earned on Escrowed Funds** –
This is the rate earned on escrowed funds, including Debt Reserves and O&M Reserves.

If desired, the user may alternatively provide an annual schedule of GNP Escalation Rates in Table 1C.

Taxes and Investment Tax Credits

This section includes income tax and investment tax credits.

This section has an input for State Investment Tax Credits (ITC), as there is not a federal Investment Tax Credit at this time for wind power. To enter an ITC, first enter the Credit Rate as a percent, then enter the percent of capital costs that are applicable to the ITC. Lastly, the ITC might reduce the federal PTC value. Click the box in under Reduce PTC? To give the PTC a “haircut”.

Figure 17 - Table 1 Wind Global Inputs – Taxes and Investment Tax Credits

Taxes and Investment Tax Credits			
	Tax Credit Rate	% of Capital Cost Applicable?	Tax Credit Amount
State Inv. Tax Credit			\$ -
	Reduce PTC?	☐ NO	% Reduced 0.0%
Income Tax Rates			
	Tax Rate		
Federal	35.0%		
State	8.84%		
Effective Combined	40.7%		
Taxable Loss Carryforward			
Federal	☐ NOT SELECTED		
State	☐ NOT SELECTED		

Income Tax rates for Federal and State and entered in the next entry cells below. Last, indicate if you want to have Carry Forward Tax Losses. If this checkbox is selected, tax loss write-offs will be carried forward and applied during future years when positive pre-tax earnings occur. If not selected, tax losses will be credited in the year that they occur, resulting in a tax credit that would be applied to other sources of income not modeled in the analysis.

Production Tax Credits are handled in one of the following sections.

Owner's Stock Performance Calculations

EconExpert-WIND includes analysis of predicted impacts of net income from the project on the price of the Owner's stock. These calculations are performed based on an assumed Table 1 Inputs of baseline (without the project) stock price, baseline projected corporate earnings profile, and baseline number of shares outstanding. If the checkbox for Issue Shares for Project Equity is selected and you have entered projections for the pricing and number of shares of Owner's Stock that are outstanding, the model will issue additional shares to cover the Owner's Equity in the project. The resulting current price earnings ratio is applied to estimate future stock performance based on accretion/dilution of shares associated with new project equity and the resulting net income additions from the project to the Owner's account. See the section above for information on how to issue shares in place of project equity.

If desired, the user may alternatively provide an annual baseline data on the Owner's Stock in Table 1C.

Project Revenue and Operating Expenses

PPA Pricing Terms 1-3

The EconExpert-WIND model is set up to handle 3 different time periods (terms) within the specific project life, and then up to 4 different pricing structures within each of those terms. In other words, the user can specify four different customers in each pricing term. In the simplest case the user can have one price for all power for the entire life of the project. In the most complicated case, the user can set up to 12 different prices over the life of the project, divided into 3 terms. The picture below attempts to visually explain this concept.

Figure 18 - Table 1 Wind Global Inputs – PPA Pricing Structure

	Year	Year	Year	Year	Year	Year	Year	Year	Year
Customer 1	Term 1								
Customer 2									
Customer 3									
Customer 4									
Customer 5					Term 2				
Customer 6									
Customer 7									
Customer 8									
Customer 9							Term 3		
Customer 10									
Customer 11									
Customer 12									

The number and length of the terms are specified in the Project Schedule section of Table 1. If a term is selected, the fonts will be normal. If a term is not selected, the fonts will be gray and hard to read. For example, in the diagram below, only two terms were indicated in the Project Schedule section, so the third term is “grayed out”.

Figure 19 - Table 1 Wind Global Inputs – PPA Pricing Summaries

Project Revenue and Operating Expenses						
Energy Contracts or Merchant Sales						
PPA Pricing Summary - Contract Term						
	12/1/2006	to	11/30/2026			
Assigned Name	Customer 1	Customer 2	Customer 3	Customer 4		
% of Annual MWh Produced	Full Year			0%	Annual MWh Produced	
QR up to MWh Sold in Period	100.0%				53,252	
Energy Prices						
Energy Sales	\$/MWh	\$/MWh	\$/MWh	\$/MWh	Weighted Average	Real Escalation %
(Less Transmission/Wheeling Charges)	\$50.00				\$50.00	-2.0%
Net Electric Sales Price (1)	\$50.00	\$0.00	\$0.00	\$0.00	\$50.00	-2.0%
PPA Pricing Summary - Second Term						
	12/1/2026	to	11/30/2031			
Assigned Name	Customer 5	Customer 6	Customer 7	Customer 8		
% of Annual MWh Produced	Full Year			0%	Annual MWh Produced	
QR up to MWh Sold in Period	100.0%				53,252	
Energy Prices						
Energy Sales	\$/MWh	\$/MWh	\$/MWh	\$/MWh	Weighted Average	Real Escalation %
(Less Transmission/Wheeling Charges)	\$71.00				\$71.00	
Net Electric Sales Price (2)	\$71.00	\$0.00	\$0.00	\$0.00	\$71.00	0.0%
PPA Pricing Summary - Third Term						
	12/1/2031	to	11/30/2031			
Assigned Name	Customer 9	Customer 10	Customer 11	Customer 12		
% of Annual MWh Produced				100%	Annual MWh Produced	
QR up to MWh Sold in Period				53,252	53,252	
Energy Prices						
Energy Sales	\$/MWh	\$/MWh	\$/MWh	\$/MWh	Weighted Average	Real Escalation %
(Less Transmission/Wheeling Charges)					\$0.00	
Net Electric Sales Price (3)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0.0%

The user can also assign names to each of the terms in the Project Schedule, and can name each customer in this section. The user may specify the percentage of yearly production that will be assigned to each price (customer), or the user can set a generation limit (up to that amount). The logic is from left to right, meaning that the customer in the far left column will be served first, and the customer in the far right last. If the values entered in the first three columns do not equal 100%, or is less than the total MWh generated, then the last customer receives whatever generation remains. Also, the percentage method of assigning generation takes precedence over the MWh method, meaning that if a value is entered in the percentage line it will override any entries in the MWh line.

EconExpert-WIND will calculate a composite yearly energy price for use in the proforma, and will calculate yearly net revenues from energy sales during each of the specified periods.

If desired, the user may alternatively provide an annual forward energy prices in Table 1C.

Other Revenues

In addition to revenues from Energy Sales, the user may specify other sources of revenues in Table 1 that include:

- Renewable Energy Credits
- Other variable energy sales (\$/MWh)
- Power sales based on capacity (\$/MW)

For each of these payments the user specifies the starting and ending years, the base year rate, and Real Escalation for each payment.

Production Tax Credits

Entries for the Federal Production Tax Credits (PTC) are set to follow the language set in the energy legislation. The user enters the PTC value set at the beginning of the base year, the escalation rate, and then the duration of the credit. Note that the escalation rate is not the real escalation, but the estimated nominal escalation ignorant of the GDP deflator. This entry logic is unique to the model.

Fixed and Other O&M Costs

Fixed Operations and Maintenance (O&M) costs are not dependent on annual net generation. Fixed O&M Inputs to Table 1 can be entered in either of two sections – Fixed O&M and Other O&M.

Fixed O&M is structured to handle a Warranty, Post-Warranty and another period of costs. The user can name these categories and the names will be carried into the various tables and charts throughout the model. Each category has a starting and ending year, and in most cases the starting year for the second and third categories should follow the ending years for the previous categories.

Other O&M offers four independent categories for fixed O&M costs, set up so that the user can name each category.

The annual fixed O&M values can be entered in 1000\$/year (Annual) for a full calendar year of operations, or on a per turbine basis. The two entries are additive – meaning if you enter values in both cells the values will be combined for a total. Costs are also expressed in Base Year \$, and a Real Escalation factor is provided. Note that real escalation will be added to the GNP Escalator, to arrive at the actual escalation for that component.

Spare Parts

The model is structured to have a one time Spare Parts Purchase, which places an amount of spare parts in inventory. Next, there is also a Spare Parts Consumption rate, which specifies the amount of spare parts consumed each year. If there are values for both entries, the user can also indicate the amount of spare parts from inventory that are consumed each year. The amount is entered as a percentage, as shown in the following diagram:

Figure 20 - Table 1 Wind Global Inputs – Spare Parts Costs

Spare Parts Costs		Year	Per Turbine (\$000/yr)	% of Cons. from Inv.	Total (\$000 Base Yr)		
Purchase of Spare Parts Inventory		5	\$ 15.0	25.0%	\$ 225		
Consumption of Spare Parts		Starting Year	Ending Year	Per Turbine (\$000/yr)	Annual (\$000)	Total (\$000 Base Yr)	Real Escalation %
		6	20	\$ 5		\$ 75	

O&M Reserve

The Operations and Maintenance (O&M) reserve is the amount that a lender or third party might require of the operator. In this section the user defines the value by the equivalent of the number of months of operating expenses, and starting and ending years. If the user would prefer to simply enter a value for each year, they can use Table 1C.

Variable O&M

Variable Operations and Maintenance (O&M) costs are dependent on gross annual electric power production, before the losses are reduced. There are two user-defined Variable O&M Inputs to Table 1. Both categories offer entries in \$/MWH. The user can name these categories and the names will be carried into the various tables and charts throughout the model. The calculated annual variable O&M costs will be the sum of these two entries and will reflect the annual plant capacity factor.

Developer Royalty

There are two options for the Developer Royalty, which is a payment to the Developer after the project is operational, based on the amount of power sold or revenue generated. The user can enter a variable payment based on either a percent of sales or a \$/MWH, or a fixed payment based on an annual amount. Note for each of these items, you must specify the starting and ending years, and you also have the option of entering a specific Real Escalation for each item.

Figure 21 - Table 1 Wind Global Inputs – Developer Royalty

Developer Royalty		Starting Year	Ending Year	Percent of Sales	Above Sales (\$000)	Total (\$000 Base Yr)	Real Escalation %
Developer Royalty, % of Sales						\$ -	
				Annual (\$000)			
Fixed Payment to Developer						\$ -	
Total Developer Royalty						\$ -	

Land Lease Royalty

There are three options for the Lease Land Royalty, which is a payment to the land owner after the project is operational, based on the amount of power sold or revenue generated. First, there are three time periods that can have different pricing terms, based on either a percent of sales or a \$/MWH. The years for these three items can overlap, but in most cases you will want the years to be sequential. Next, there is a fixed annual payment based on either the number of turbines or an annual payment. Last, there is a minimum payment that can be specified. The minimum payment is calculated against the sum of the variable and fixed Land Lease Royalty payments. Note for each of these items, you must specify the starting and ending years, and you also have the option of entering a specific Real Escalation for each item.

Figure 22 - Table 1 Wind Global Inputs – Lease Land Royalty

Land Lease Royalty					
	Starting Year	Ending Year	Percent of Sales	\$/MWh	Total (\$000 Base Yr)
Land Lease % of Revenue - Period One	1	20	3.0%		7
Land Lease % of Revenue - Period Two	20	25	0.0%		-
Land Lease % of Revenue - Period Three					-
			Per Turbine (\$000/yr)	plus Annual (\$000)	
Fixed Annual Payments					\$ -
Minimum Annual Payments, Applies to ALL					\$ -

Property Taxes and Insurance

Property Taxes and Insurance can be individually input in Table 1 as amounts in (\$000) /year, and as a “Factored” amount (if both entries are used, they are summed) as follows:

- The Factor for estimation of life-of-project yearly Property Taxes and Insurance is the percentage of current book Asset Basis. As the asset is depreciated and the basis declines, the annual Property Taxes and Insurance will correspondingly decline.
- If a (\$000) amount is entered for Property Taxes or Insurance, the amount is used in each year of the project life and is escalated using the GNP deflator.
- The user may also enter annual property taxes and annual insurance costs in the Annual Inputs Table, where specific amounts can be entered in each year.

Investment Costs

Capital Investment Costs are entered only in Table 1. These are costs incurred during the project development, engineering and construction phases of the project, but prior to commercial operations of the facility. Please note that these costs are not escalated by the model, and are used as the exact amounts entered by the user. For each line item the user can enter a ‘per turbine’ cost and a total cost. These two costs are additive, and are summed in the adjacent column.

These costs are broken into two main categories:

Figure 23 - Table 1 Wind Global Inputs - Development Costs

Phase 1 - Development Costs

These costs are typically incurred prior to financial closing and are treated by EconExpert-WIND as a lump sum expense in the first month of the construction phase. A number of default cost categories are provided as well as two optional User-Defined Categories. The user may also add contingency as a percentage of the Development Costs and as a fixed amount in (\$000) - the two entries will be summed if both are entered. You can specify up to 8 categories of Phase 1 Development Costs.

Investment Costs				
		# of Turbines		15
Phase 1 - Project Development				
(all figures are in \$000)				
	Per Turbine Expenses	Other Expenses	Total Project (Not Escalated)	% of Subtotal
Developer Fee	\$	500	\$ 500	30.6%
Met Stations	\$	35	\$ 35	2.1%
Licensing / Permitting	\$	45	\$ 45	2.8%
Legal	\$	25	\$ 25	1.5%
Insurance	\$	-	\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
Subtotal Project Development Costs	\$	-	605	37.0%
Contingency, Amount - % of above		Amount \$000	% of Proj. Dev.	
		5.0%	\$ 30	
Sub-Total Development Costs, with Contingency			\$ 635	38.8%
Sales Tax, % of above		Amount \$000	% of Proj. Dev.	
		1.00%	\$ 1,000	61.2%
Sub-Total Development Costs, w/ Taxes & Contingency			\$ 1,635	

One category title, the Developer Fee, cannot be modified. This is because this specific item feeds into the partnership calculations, and is set up so that the user can allocate this payment to one of the partners. This allocation is handled on Table 1, under the Project Finance section, and the result transfers automatically to the EconExpert-Partnerships Module.

The user may also add contingency as a percentage of the Phase 1 costs and as a fixed amount in (\$000) - the two entries will be summed if both are entered. Likewise, the user can enter a sales tax figure as an amount and as a % of Phase 1 Costs – the two entries will be summed if both are entered.

Phase 2 - Engineering, Construction and Start-up Costs

These are costs that occur after financial closing, including interest during construction, which is calculated using the Construction-Phase Drawdown Schedule in Table 3. Land and Soft Costs (e.g. Start-up/Mobilization/Spares, Working Capital, Up-Front Financing Fees, Debt Reserves and Interest During Construction), which are concentrated at the start or end of the construction phase, are also entered here.

The first section under Phase 2 is the Land costs. Most wind farms projects lease the land, but in the case that a project purchases land, the value can be entered here.

The next section, Wind Turbine Costs, offers five user-defined rows in addition to the Wind Turbine Cost rows. Note that there are two Wind Turbine Cost rows – one for costs in dollars and one for costs in Euros, in the event that turbines being purchased are European and manufacture is pricing the turbines in Euros. Simply click the check box, as indicated in the figure below, enter a conversion rate, and the cost in Euros in the top row. The user can then enter any additional wind turbine costs in dollar on the row below. On Table 3 Construction the user can allocate those costs of the construction cycle, and which costs will occur in which months.

Figure 24 - Table 1 Wind Global Inputs – Wind Turbine Costs

Wind Turbines					
Some Wind Turbine costs in Euros?		☒ YES			
EURO/US\$		0.8000			
	Per Turbine Expenses	Other Expenses	Total Project (Not Escalated)		% of Subtotal
Wind Turbine Costs (in Euros)	1 500	1 500	\$ 6,400		20.4%
Wind Turbine Costs (in \$)	\$ 1,250		\$ 18,750		59.8%
Installation	\$ 150		\$ 2,250		7.2%
			\$ -		
			\$ -		
			\$ -		
			\$ -		
Subtotal All Wind Turbines Cost	\$ 2,025	\$ 625	\$ 27,400		87.3%

The next section in Phase 2 is the Balance of Plant expenditures. All of the category titles can be modified in this section. In the next section, Other Costs, there is only one category title that can be modified. The other category is for the Project Valuation sensitivity, explained in another section.

The user may also add contingency as a percentage of the other Phase 2 Costs and as a fixed amount in (\$000) - the two entries will be summed if both are entered. Likewise, the user can enter a sales tax figure as an amount and as a % of Phase 2 Costs – the two entries will be summed if both are entered.

The last section is the Soft Costs, which can be estimated using a Factored amount and a (\$000) amount. If both are entered, they will be summed. Factored amounts are calculated as follows:

- Start-up and Mobilization Costs - As a percentage of the total Fixed O&M Costs in Base Year \$
- Debt Reserves - Based on the equivalent/prorated number of months of debt payments using a mortgage type payment schedule
- Debt Reserves - Based on the equivalent/prorated number of months of debt payments using a mortgage type payment schedule
- Vendor Letter of Credit – as a percent of total Wind Turbine costs, which decreases as payments are made and tracked on Table 3 Construction
- Working Capital - Based on Accounts Receivable and Accounts Payable Days specified in the two entry cells. On Table 1C the user can simply specify a dollar amount, instead of considering receivable and payable days.

Wind Farm Residual Value

Following the Capital Investment Cost table, the user is provided with the option to recover a residual value on the plant investment at the end of the Project Life. The residual value can be specified both as an amount and as a percentage of the original plant basis. If both inputs are used the result will be the sum of the two inputs.

Project Finance

After the project parameters are set it is time to decide how the project will be financed. The top section of the Project Finance column is the major finance inputs:

- Debt/Equity during Construction
This is the percentage of the costs realized during the construction phase that are funded with Owner's Equity. If set to 0, debt will be used to finance 100% of the construction period costs. Costs during the construction phase are calculated based on the Drawdown Schedule with Interest During Construction calculated based on the resulting debt. The Interest Rate on Construction Term Debt is discussed on [page 56](#).
- Debt/Equity during Operations
The is the percentage of the Total Investment Cost, including Soft Costs and Interest During Construction, that is funded with Equity when the Permanent Debt is initiated. The remaining amount will be allocated to Primary and Subordinated Debt. The terms specified for Primary and Subordinated Debt, are discussed on [page 56](#).

Figure 25 - Table 1 Wind Global Inputs – Equity and Project Ownership

Project Finance					
Equity and Project Ownership					
	% Debt	% Equity (Entry)	Debt (\$000)	Equity (\$000)	Total (\$000)
Start of Construction	30.0%	70.0%	\$ 8,100	\$ 18,900	\$ 26,999
Start of Operations	50.0%	50.0%	\$ 13,500	\$ 13,500	\$ 26,999
Debt Coverage Ratios (DSCR)					
Include PTC in DSCR Calc?	☒ YES ☐ NO				
Actual Min.	0.59				
Project Stage					
Equity Participant	Construction	Operations	Developer Fees Recipient		
Developer	100.0%	30.0%			
Tax Investor		50.0%			
Other		20.0%			
	100.0%	100.0%	0.0%		

The specific debt parameters are handled in the sections below.

Financing Terms - Construction Financing and Permanent Financing

In this section of Table 1, the user can specify debt terms as follows:

- Construction Financing - The user can specify the interest rate applied during the term of the construction loan. Interest During Construction is calculated in Table 3, using either the Default or User-Defined Drawdown and Debt/Equity Schedules.
- Permanent Financing - Senior Debt and Subordinated Debt - The user can specify the “mortgage type” loan parameters including:
 - The Term of the loan
 - The fixed interest rate
 - The number of years the “Interest-Only” payments are made during the initial term of the loan
 - The annual Financing Fees

The user may also enter Terms for Senior Debt and Subordinated Debt in the Annual Inputs Table, where options are provided to override the:

- Annual interest rate
- Interest only payments
- Accelerated principal repayment schedules as a percentage of the initial debt balance or in (\$000)/year.

For the purposes of calculating debt coverage ratios, the coverage ratio for Senior Debt is calculated assuming funds available to cover debt including all expenses and Subordinated Debt Costs.

Sources of Capital

A summary of sources of capital for the project is provided in this section. The figure below shows these amounts. Sources are shown for the total project, and for the each investor's percent interest in the project.

Depreciation

EconExpert uses the 'Deferral Method' of Generally Accepted Accounting Principles (GAAP) for all Book Analyses including the Income Statement, Cash Flow Statement and Balance Sheet in Table 11. Depreciation is calculated using the cost basis of the plant (Capital Investment minus working capital, debt reserves and land). In this section of Table 1, the user specifies the percentage of the original plant Cost Basis that is depreciated for Cash Tax and for Book Tax purposes. Depreciation for cash taxes is calculated using IRS Modified Accelerated Cost Recovery (MACRS) depreciation schedules. Book depreciation uses Straight-Line Methods. Both methods prorate depreciation for partial operations in the first year and accelerate capture of depreciation in the last year of operation if the project is retired before the end of the depreciation life. Deferred taxes are calculated by the model based on the difference between book and cash taxes, resulting from the differences between these two depreciation calculations.

In addition to the six standard (5, 7, 10, 15, 20 and 30 years) MACRS depreciation Classes that are programmed in the model, the user may select from two additional categories that can be defined by the user. To use either or both of these categories, first name the category in the unprotected cells titled *User Defined in Table 11* and then specify the percentage of the tax basis to be depreciated in each of your user defined categories. Next from the NAVIGATE menu select *NAVIGATE>Results Tables>Table 13 Depreciation*.

In the shaded cells, specify the amount (in decimal fraction 0.100 = 10.0%) to be depreciated in each year such that the total sums to 1.000 (= 100.0%).

Figure 26 - User Defined Depreciation Schedules in Table 13 Depreciation

			1	2	3	4	5
Year			2009	2010	2011	2012	2013
Months Applicable During Year			10	12	12	12	12
Schedules for Capital Investment Costs			Return to Depreciation Section of Table 1 Global Inputs				
<u>BOOK Depreciation Schedules - Straight Line</u>			Sum				
5 Year SL	1.000		16.7%	20.0%	20.0%	20.0%	20.0%
10 Year SL	1.000		8.3%	10.0%	10.0%	10.0%	10.0%
15 Year SL	1.000		5.6%	6.7%	6.7%	6.7%	6.7%
20 Year SL	1.000		4.2%	5.0%	5.0%	5.0%	5.0%
30 Year SL SL	1.000		2.8%	3.3%	3.3%	3.3%	3.3%
<u>Cash Tax - MACRS - Mid-Year Convention (Capture balance in last year of life if Project Life is Less than Depreciation Life)</u>							
3 Year	100.0%		33.3%	44.5%	14.8%	7.4%	
5 Year	100.0%		20.0%	32.0%	19.2%	11.5%	11.5%
7 Year	100.0%		14.3%	24.5%	17.5%	12.5%	8.9%
10 Year	100.0%		10.0%	18.0%	14.4%	11.5%	9.2%
15 Year	100.0%		5.0%	9.5%	8.6%	7.7%	6.9%
20 Year	100.0%		3.8%	7.2%	6.7%	6.2%	5.7%
30 Year SL	100.0%		1.6%	3.2%	3.2%	3.2%	3.2%
<u>Cash Tax - MACRS - Mid-Quarter Convention - Placed in Service: 1st Quarter (Capture balance in last year of life if Project Life is Less than Depreciation Life)</u>							
3 Year	100.0%		58.3%	27.8%	12.4%	1.5%	
5 Year	100.0%		35.0%	26.0%	15.6%	11.0%	11.0%
7 Year	100.0%		25.0%	21.4%	15.3%	10.9%	8.8%
10 Year	100.0%		17.5%	16.5%	13.2%	10.6%	8.5%
15 Year	100.0%		8.8%	9.1%	8.2%	7.4%	6.7%
20 Year	100.0%		6.8%	7.0%	6.5%	6.0%	5.5%

NOTE The calculated unleveraged IRR may change slightly (usually by less than 0.1%) as a function of changes in Project Equity. This can occur when you select the *Factor* option for calculating property taxes or insurance costs, which when carried through to the unleveraged analysis are tied to the cost basis, which includes interest during construction and so has a dependency on the amount of debt assumed. This effect is very minor and will not be observed if annual inputs or only a fixed (\$000)/yr amount are entered for Property Taxes and Insurance costs.

Calculation of IRR and the IRR Guess

Calculation of the project's Internal Rate of Return (IRR) is an important analysis feature in EconExpert-WIND. The IRR (and Net Present Value - NPV) are summarized at the top of Table 1 where you can continuously view how they react to changes in Inputs to Table 1.

Microsoft Excel uses an iterative technique for calculating IRR. The guess is a number that you guess is close to the result you expect for the IRR. Starting with guess, the IRR calculation cycles until the result is accurate within 0.00001 percent. If IRR can't find a result that works after 20 tries, the #NUM! error value is returned. In most cases you do not need to provide guess for the IRR calculation. If the guess is omitted, it is assumed to be 0.1 (10 percent). If the IRR result gives the #NUM! error value, or if the result is not close to what you expected, try again with a different value for guess.

The IRR Guess is entered in Column I, just above Table 1.

Figure 27 - Table 1 Wind Global Inputs - The IRR Guess

18																																																		
19																																																		
20	ts Reserved ma - V7.0 Today is: 12/12/2005 Load Global Inputs Wizard REFRESH EconExpert-WIND Menu First Guess for IRR Excel Calculations <table><tr><td>Before Tax:</td><td>5.00%</td></tr><tr><td>After Tax:</td><td>15.00%</td></tr></table>										Before Tax:	5.00%	After Tax:	15.00%																																				
Before Tax:	5.00%																																																	
After Tax:	15.00%																																																	
21																																																		
22																																																		
23																																																		
24																																																		
25	<table><tr><td>Name of File:</td><td>C:\EconExpert Files\Wind Models\EconExpert-WIND Proforma V7-7013.5 NO.xls\Table 1 Wind Global Inputs</td><td rowspan="2">Proforma Notes:</td><td colspan="7" rowspan="2">Example data provided by CEI in the model is for relative to the accuracy or fitness for purpose of</td></tr><tr><td>Description:</td><td>Example Data</td></tr></table>										Name of File:	C:\EconExpert Files\Wind Models\EconExpert-WIND Proforma V7-7013.5 NO.xls\Table 1 Wind Global Inputs	Proforma Notes:	Example data provided by CEI in the model is for relative to the accuracy or fitness for purpose of							Description:	Example Data																												
Name of File:	C:\EconExpert Files\Wind Models\EconExpert-WIND Proforma V7-7013.5 NO.xls\Table 1 Wind Global Inputs	Proforma Notes:	Example data provided by CEI in the model is for relative to the accuracy or fitness for purpose of																																															
Description:	Example Data																																																	
26																																																		
27																																																		
28	<table><tr><td colspan="4">TERM USED FOR SENSITIVITIES</td><td colspan="6">After Tax NPV (\$000)</td></tr><tr><td>10</td><td>20</td><td></td><td></td><td colspan="2">NPV Summary Years</td><td>6</td><td>10</td><td></td><td></td></tr><tr><td>8.23%</td><td>11.27%</td><td></td><td></td><td>Leveraged @ 10.0%</td><td>\$</td><td>(1,262)</td><td>\$</td><td>(555)</td><td>\$</td></tr><tr><td>3.92%</td><td>7.65%</td><td></td><td></td><td>Unleveraged @ 8.0%</td><td>\$</td><td>(7,552)</td><td>\$</td><td>(3,574)</td><td>\$</td></tr></table>										TERM USED FOR SENSITIVITIES				After Tax NPV (\$000)						10	20			NPV Summary Years		6	10			8.23%	11.27%			Leveraged @ 10.0%	\$	(1,262)	\$	(555)	\$	3.92%	7.65%			Unleveraged @ 8.0%	\$	(7,552)	\$	(3,574)	\$
TERM USED FOR SENSITIVITIES				After Tax NPV (\$000)																																														
10	20			NPV Summary Years		6	10																																											
8.23%	11.27%			Leveraged @ 10.0%	\$	(1,262)	\$	(555)	\$																																									
3.92%	7.65%			Unleveraged @ 8.0%	\$	(7,552)	\$	(3,574)	\$																																									
29																																																		
30																																																		
31																																																		
32																																																		
33	and Production																																																	
34	Project Revenue and Operating Expense																																																	

NOTE The IRR Summary Table at the top of the Global Input sheet allows the user to specify what IRR Terms should be studied. The third input column of this table is especially important because it specifies the IRR Term that will be used in EconExpert-WIND's Automated Sensitivity Analyses.

Table 1C Annual Inputs

Annual Inputs apply only to a given year in the life of the project. You can use Annual Inputs any time that you would like to more precisely model a variable than can be accomplished using Table 1 Global Inputs. Examples of how you can use Annual Inputs to Table 1C to perform custom calculations include:

- Varying generation or losses year over year
- Forward electric price curves
- Customized debt including:
 - Floating Interest Rates on Debt
 - Accelerated or Deferred Principal Payments (Sweeps) tied to the Debt Coverage Ratio
 - Interest only payments
 - Lump sum principal repayments
- Modeling of a specific contracts or agreements for
 - Lump sum principal repayments

- Power Purchase Agreements.
- O&M services (LTSA) agreements
- Modeling of specific gearbox failures
- Use of the User-Defined Fields that permit completely flexible customization of the model

Any non-zero entry is read as an Annual Input and included in the calculations in the model. If the cell is blank or a value of zero '0' appears in the cell, the corresponding Global Input will be used. If it is desired to enter a '0' for Annual Input, use a very small non-zero entry such 0.0000001, and the value 0 will be used in the model, overriding any entry from Global Inputs. Note that only years with entries will override Global Inputs – allowing the user to revert back to the escalating economic item, if desired.

Table 1C is range protected, allowing you to enter data ONLY into green shaded Input cells. When a non-zero entry appears on a shaded cell, the format of that cell will change to **bold red text on a yellow background** indicating that data is present and used by the model.

Table 1C is organized into sections associated with each class of input categories and generally follows the organizational architecture of the Global Inputs sheet. The columns to the right in Table 1C each represent a project year, with Column F used for the first year of the project life. You can locate a specific Input Category in Table 1C by either scrolling through the table, or by using the NAVIGATE Feature on the Command Menu. Table 1C is organized in the following sections:

- Economic Factors – The annual GNP deflator
- Wind Farm Performance – Production, losses, and capacity factor
- Energy Contracts or Merchant Sales - Period energy consumption
- Energy Price During Each Period - Energy pricing by period
- Other Revenues - RECs, plus four user-defined revenue fields

- Variable O&M – Variable Costs and purchased power
- Fixed O&M – Warranty and post warranty costs
- Other O&M and Spare Parts – User-defined inputs from Table 1, plus property tax and insurance
- Royalties and Land Lease Equivalents – Lease payments to land owners or developers
- User Defined Additional Annual Expenses – 3 user-defined expense fields
- Major Maintenance – Purchase of spare parts and O&M reserves

- Working Capital – Options for total working capital or Accounts Receivable and Payable Days
- Debt Service - Custom interest rate and debt payment schedules
- Income Taxes, Depreciation and Dividends – Annual depreciation, incomes taxes, tax credits, and dividends
- Corporate Stock Performance

Note that you can also enter formulas into annual input cells. These formulas can be linked to other parts of EconExpert-WIND, to sheets that you insert into the model, and to sections at the bottom of each table that are available for you to perform your own calculations.

Results generated using Annual Inputs entries to Table 1C will either override results produced from a corresponding entry to Table 1, or will be added to those results. Examples of specific inputs where results are added rather than overriding Global Inputs include:

- User Defined Revenue Sources (four categories that you can define)
-

- User Defined Expenses (three categories that you can define)
- Additional Tax Deductions
- Adjustments to State and Federal Depreciation Schedules
- Additional State Taxes
- Additional Federal Taxes
- After-tax Dividends

All of the other inputs will override Table 1 Inputs in (AND ONLY IN) the years that non-zero values appear in Table 1C. If Annual Inputs are entered in every year of the project life the corresponding Global Inputs entered in Table 1 will be totally overridden and will not be used in the analysis. If Annual Inputs are only entered in some years, then the Global Inputs will be used in all other years, applying escalation where appropriate.

If Annual Inputs are entered into any cell in Table 1C, the respective “Input Indicator” will show the value **9999999** (Column C), along the left side of the respective inputs which will also be reformatted to **bold red on yellow format**. If there are no entries in a row, then a red **0** will appear. A **0** advises you that NO Annual Inputs have been entered in that row. A **9999999** indicates that an Annual Input has been entered in one or more years over the project life, even if such entries do not appear on your current screen view. In this case, the corresponding input to Table 1 will also be reformatted to **bold red** and a red warning labeled **annual inputs** will also appear near to the input in Table 1, advising you that an Annual Input value has been entered and that the corresponding Global Input will be overridden. The Status Sheet will also provide a notice that this has occurred.

A feature is provided on the EconExpert-WIND UTILITIES Menu that allows you to clear and reset the Annual Input Table to all ‘0’s, meaning that none of the inputs to Table 1 will be overridden. To reset the Annual Inputs Table from the UTILITIES menu select *Save or Reset Inputs>CLEAR Annual Inputs*.

NOTE If you do this, the current Annual Inputs will be lost. You will be provided with a warning. If desired, you can save the Annual Inputs before *resetting* them. This can be initiated from this same menu option.

NOTE Cost entries are input to Table 1C in CURRENT \$. This means that the cost and revenue entries to Table 1C will not be impacted by escalation rates entered elsewhere in the model, and fixed values will not be impacted by partial year operation. The values will be used by the model as entered.

Most of the inputs included in Table 1C are self explanatory, and all are accompanied by Help Comments that describe the purpose and function of that input. Several of the specific inputs to Table 1C provide unique functionality and are individually described below.

Economic Factors

You can vary the annual GNP escalation rate by entering non-zero values into this section. In the example provided, the GNP Escalation Rate of 2.5% entered in Table 1 will be overridden in years 1, 2, and 3 by the amounts 3.0%, 3.5% and 4.0% respectively. In succeeding years, inflation will default back to the Global Inputs rate of 2.5% if no entries are provided for those years.

Figure 28 - Table 1C Annual Inputs - GNP Escalation Rate

TABLE 1C - Annual Inputs		Click Here to REFRESH Menu		Year Operation in Year 1 and Year 21	
Example Data November 1, 2005				Holding Bin 2 is not labled	
Show Comment For Instructions		Net Production		53,252	Wind Rating: P90
Shaded Cells Indicate Inputs		Description		Example Data	
All Annual Inputs expressed at \$ values are entered in Current Year \$ All Figures in \$000		Year of Operation		1	2
		Year		2006	2007
		Operational Months		1	12
Economic Factors		Total			
GNP Escalation Rate (Revenues and Expenses), %				2.0%	

Wind Farm Performance

Table 1C allows you to input annual values for Potential Gross Energy Production and Generation Losses. In this section you can alter the amount of power generated and delivered.

Figure 29 - Table 1C Annual Inputs – Wind Farm Performance

Wind Farm Performance					
Potential Gross Energy Production, MWh	0				
Subtotal Generation Losses Above, %	0	Overrides Table 1			
Subtotal Other Losses, %	0	Entries are additive to Table 1's Wind Global Inputs			
Energy Production After Generation Losses, MWh	0	1,108,962	4,621	55,448	55
Net Energy Delivered, MWh	0	1,065,047	4,438	53,252	53
Effective Annual Capacity Factor, % of Gross	0		2.7%	32.4%	3
Total Merchant and Contracted Energy Sales, MWh	0	1,065,047	4,438	53,252	53
% Difference Between Delivered and Contracted Amounts	Tolerance	0.5%	0.0%	0.0%	

- Potential Gross Energy Production**

This value matches the entries on Table 1 in the Wind Rating Profile section.

- Subtotal Generation Losses Above**

This value will replace the total generation losses specified on Table 1.

- Subtotal Other Losses**

This value will add to the losses specified above or on Table 1.

- Energy Production After Generation Losses**

This line calculates the generation from Table 1 or from the Potential Gross Energy Production if a value is entered for that year, and deducts the generation losses for each year from the values entered on Generation Losses lines above, or from Table 1 if no values are entered.

- Net Energy Delivered**

The Net Energy Delivered also considers the Other Losses.

Energy Contracts or Merchant Sales

For each of the PPA Pricing Periods determined on Table 1, the user can modify the annual production amount. On Table there were options for up to 4 different pricing options for each PPA Period. Those same options exist on Table 1C.

IMPORTANT If you have more than one PPA or pricing structure (called Customer in the model) for a given year, if you enter one production value in this section you must provide all of the desired Periods for that year. Otherwise the 4th Customer in each PPA term will be the default recipient of any excess production.

Energy Price During Each Period

For each of the PPA Pricing Periods determined on Table 1, the user can modify the annual PPA price. On Table there were options for up to 4 different pricing options for each PPA Period. Those same options exist on Table 1C.

Other Revenues

In addition to revenues realized from sales of Energy, the user may specify other annual income sources in Table 1C which can include:

- Renewable Energy Credits
- Other variable energy sales (\$/MWh)
- Power sales based on capacity (\$/MW)
- Additional Revenue Sources - The user may input additional income sources into any of 4 User-Defined Categories, in any year of the project life. Values are input in Current dollars and are not escalated by the model. These amounts will be added to other revenue sources calculated from Table 1 Inputs. The labels are user-defined and will appear in the corresponding tables and reports throughout the model. These titles will be accessible for Sensitivities and will be updated on the EconExpert-WIND menu when the menu is refreshed.

Figure 30 - Table 1C Annual Inputs - Other Revenue Sources

EconExpert-WIND V7-7013.4 ©Copyright 2005 CER Inc. All Rights Reserved		Click Here to REFRESH Menu		Year Operation in Year 1 and Year 21	
TABLE 1C - Annual Inputs		Example Data		Holding Bin 2 is not labeled	
November 1, 2005		Show Comment For Instructions		Net Production: 53,252	
Shaded Cells Indicate Inputs		No Annual Inputs Used		Wind Rating: P90	
All Annual Inputs expressed at \$ values are entered in Current Year \$		Description		Example Data	
All Figures in \$000		Year of Operation		1 2	
		Year		2006 2007	
		Operational Months		1 12	
Other Revenues					
Renewable Energy Credits, \$/MWh		0			
Global Inputs Other Revenues User Defined 1, \$/MWh		0			
Global Inputs Other Revenues User Defined 2, \$/MW		0			
Additional Revenues 1, \$000/yr		0		Entries are additive to Table 1 \Wind Global Inputs	
Additional Revenues 2, \$000/yr		0		Entries are additive to Table 1 \Wind Global Inputs	
Additional Revenues 3, \$000/yr		0		Entries are additive to Table 1 \Wind Global Inputs	
Additional Revenues 4, \$000/yr		0		Entries are additive to Table 1 \Wind Global Inputs	

User Defined Labels

Variable Operating Costs

Variable Operations and Maintenance (O&M) costs are dependent on gross annual electric power production, before the losses are reduced. There are two user-defined Variable O&M Inputs to Table 1 which have corresponding Table 1C entries. Both categories offer entries in \$/MWH. The user can name these categories in Table 1 and the names will be carried into the various tables and charts throughout the model. The calculated annual variable O&M costs will be the sum of these two entries and will reflect the annual plant capacity factor.

Fixed Operating Costs

Fixed Operations and Maintenance (O&M) costs are not dependent on annual net generation. Fixed O&M Inputs are defined in Table 1, and are structured to handle a Warranty, Post-Warranty and another period of costs. The user can name these categories in Table 1 and the names will be carried into the various tables and charts throughout the model.

Other O&M and Spare Parts

Other O&M offers four independent categories for fixed O&M costs, set up so that the user can name each category in Table 1.

Also in this section the user can specify the annual Spare Parts Consumption rate. The model is structured to have a one time Spare Parts Purchase, which is only specified on Table 1.

Lastly in this section the user can specify annual Property Tax and Insurance costs.

Royalties and Land Lease Payments

The two entries for the lease payment will override any payments entered on Table1, including the variable costs or minimum payments.

User Defined Additional Expenses

The user may input Additional Annual Operating Expenses in any of three User-Defined Categories. Values are input in Current dollars and are not escalated. These amounts are added to other expenses calculated from Table 1 Inputs and from the items listed above. These costs can be fixed or variable, depending how the user defines them. The titles entered will appear in the various reports throughout the model. The labels input by the user will appear in the corresponding tables and reports throughout the model. Note that the user may also define the titles for these User-Defined Categories. These titles will be accessible for Sensitivities and will be updated when on the EconExpert-WIND Menu is refreshed.

Figure 31 - Table 1C Annual Inputs - Fixed and Variable O&M Inputs

EconExpert-WIND V7-7013.4 ©Copyright 2005 C.E.I. Inc. All rights reserved			
TABLE 1C - Annual Inputs Example Data November 1, 2005 Show Comment For Instructions Shaded Cells Indicate Inputs		Click Here to REFRESH Menu Year Operation in Year 1 and Year 21 Holding Bin 2 is not labeled	
All Annual Inputs expressed at \$ values are entered in Current Year \$ All Figures in \$000		Net Production: 53,252 Wind Rating: P90	
No Annual Inputs Used		Description: Example Data	
		Year of Operation	1 2
		Year	2006 2007
		Operational Months	1 12
User Defined Additional Annual Expenses, \$000			
Additional Expenses 1, \$000/yr		0	Entries are additive to Table 1 Wind Global Inputs
Additional Expenses 2, \$000/yr		0	Entries are additive to Table 1 Wind Global Inputs
Additional Expenses 3, \$000/yr		0	Entries are additive to Table 1 Wind Global Inputs

User Defined Labels

In all cases note that the entries to Table 1C are in Current \$ (i.e. include escalation).

Major Maintenance

Purchase of Spare Parts is one time occurrence, but this section offers the user the opportunity to enter values in multiple years. In this item the user would enter the years that the purchases would occur.

The Operations and Maintenance Reserve can be entered in current dollar, versus month-equivalent as is offered on Table 1.

Debt Service

The user can specify Annual debt terms for Primary and Subordinated Debt in Table 1C including:

- **Principal Repayment Schedule.** The user can input the annual percentage of the initial debt balance, or the annual 1000\$ amount of principal to be repaid in any year during the life of the subject loan. This section can be used to model accelerated or deferred principal repayments, including sweeps and extension of principal repayments. Amounts entered here will override the standard mortgage-style principal repayment schedule calculated based on Table 1 Inputs. Note that Principal Repayments specified in this section will take precedence over Interest-Only Payments if such both options are selected in the same year. If payments are not entered in all years, the selected mortgage-type repayment schedule specified in Table 1 will be used in the remaining years until the entire principal balance is paid, or until the end of the debt term. Any residual principal will be repaid as a balloon payment in the last year of the debt term.
- **Interest Rates.** The user can input the Annual effective interest rate during any year in the life of the subject loan. This section can be used to model variable rate loans or those linked to indices. Amounts entered here will override the standard mortgage-style fixed interest rates entered in Table 1.
- **Interest-Only Payments.** The user can specify Interest-Only Payments in any year during the life of the loan by entering a 1 in the year that the Interest-Only Payments would apply. Note that Principal Repayments specified above will take precedence over Interest-Only Payments if both options are selected in the same year.

Income Taxes, Depreciation and Dividends

The user can enter Annual Depreciation Rates, Additional Deductions from State and Federal Taxes, State and Federal Tax Rates, Additional Tax Amounts and annual After Tax Dividends in any year that they might occur. Note that Additional Deductions, Additional Taxes and After-Tax Dividends do not override amounts input to Table 1 Global Inputs.

The user can enter Dividend Amounts to be withdrawn from the project After-Tax as a percentage of after-tax net income or as a set amount. If both entries are made they will be summed. The resulting dividends are deducted from the net income after-tax and will result in a reduction to the project's IRR and NPV after-tax.

Corporate Earnings without Project and Shares of Company Stock Outstanding

EconExpert-WIND includes analysis of predicted impacts of Share Dilution and Net Income on the price of the Owner's stock. These calculations are performed based on an assumed baseline stock price without the project, the baseline projected corporate earnings profile and the baseline number of shares outstanding. The resulting current price earnings ratio is applied to estimate future stock performance by calculating the resulting accretion/dilution of shares and the impacts of net income from the project.

Using Table 1C, the user may specify the annual effective Price Earnings Ratio of the stock (reflective of changing anticipated market conditions), forecasted annual Earnings/Share expressed in Current \$ and the annual number of Corporate Shares Outstanding. Amounts entered here will override inputs to Table 1.

If an annual profile for Corporate Shares Outstanding is entered, it should be input for all succeeding years during the project life as the model will revert to Table 1 entries if a “zero-valued” input is read in a year succeeding a change in the number of shares issued.

Table 1D - Data Conversion Sheet

The Data Conversion sheet provides additional flexibility to utilize energy pricing and performance in up to 24-Periods defined by the user. To link this sheet with the rest of the model the user must select the option on the Utilities Menu to link the aggregated data in Data Conversion Sheet to the model by formula reference to the Annual Inputs Sheet. In the Data Conversion Sheet, there are **annual** entries for:

- Hours in Each Period (this is where you enter the Period Names)
- Gross MWH Energy Production
- Curtailment Risk % (Reduction in Gross Production)
- Energy Sales for each PPA Term
- Revenue per MWH for each PPA Term

Plant Capacity and capacity factors mathematically averaged and referenced in Table 1C with formulas linked to the Data Conversion Sheet.

Input rows are unprotected and **shaded in green**. Period 24 is calculated by difference to ensure that the total number of hours in a full calendar year is equal to 8760 (note that leap years are neglected).

Please note the following points when you use this feature:

- All data is entered in Current \$.
- Data can be copied and pasted from other sources. The pasted data should be pasted as VALUES from the source data file, or can be linked using formulas.
- Aggregated results will be referenced by formulas in the Annual Inputs Sheet, overwriting the current Annual Inputs and overriding Global Inputs in the years that non-zero values are transferred.
- If block period data is utilized, it is recommended that the user enter that data for the whole project life. If the data is not available for the whole project life, use formulas in the cells to project the data over the entire project life. Otherwise, where blank cells or zeros are transferred to the Annual Inputs Sheet, the Global Inputs data will be applied.

Table 1Q – Quick Project Analysis

This table is used to quickly analyze a wind power project, by only focusing on set of economic inputs to model a project. Simply entering values on this table is insufficient to perform a quick analysis. The user must go to the Utilities menu, and select *Set up Model in Quick Project Analysis Format*.

Once you select this option, Table 1Q is linked into the rest of the model. You can run sensitivities and also modify the other inputs sheets to enhance your analysis.

Figure 32 - Table 1Q Quick Project Analysis

Quick Project Analysis		Project Description		REFRESH Menu		Set up model in Quick Analysis Format													
Wind Model Simple Inputs		Leveraged Results for 20 Year Project				Project Finance, \$000													
November 1, 2005		NPV IRR Pre-Tax \$ (10,851) -0.5% Post-Tax \$ 585 11.3%				Equity \$0 #DIV/0! Debt \$0 #DIV/0!													
All Figures in \$000																			
Project Schedule				Revenues and Expenses															
Financial Closing Date 02/01/06 Construction Term, mos (0 - 48) 8 Commercial Operation Start Date 10/01/06 Project Life, Years (32 Max) 20 Years Retirement Date 10/01/26				Net Energy Price \$/MWh 35.30 Real Escalation Rate 0.5% Added to GNP rate Renewable Energy Credits \$/MWh Duration 10 Federal PTC Rate YES State Income Tax Rate 8.84%															
Gross Wind Farm Capacity and Generation				<table border="1"> <thead> <tr> <th>Expense Name</th> <th>Amount</th> <th></th> </tr> </thead> <tbody> <tr> <td>O&M Expense #1</td> <td>\$/Turbine Fixed</td> <td>\$ 10.0</td> </tr> <tr> <td>O&M Expense #2</td> <td>\$/Turbine Other</td> <td>\$ 5.0</td> </tr> <tr> <td>O&M Expense #3</td> <td>\$000 Other</td> <td>\$ 100</td> </tr> </tbody> </table> 1000 \$ Total Project				Expense Name	Amount		O&M Expense #1	\$/Turbine Fixed	\$ 10.0	O&M Expense #2	\$/Turbine Other	\$ 5.0	O&M Expense #3	\$000 Other	\$ 100
Expense Name	Amount																		
O&M Expense #1	\$/Turbine Fixed	\$ 10.0																	
O&M Expense #2	\$/Turbine Other	\$ 5.0																	
O&M Expense #3	\$000 Other	\$ 100																	
Turbine Rating 1,650 kW # of Turbines 50 Gross Wind Farm Capacity 82,500 kW Net Wind Farm Capacity Delivered 44.4% =Capacity Factor Net Energy Delivered 320,879 MWh/yr				Land Lease % of Sales 1.0% \$/MWh															
Investment Costs				Project Finance															
<table border="1"> <thead> <tr> <th></th> <th>Amount (\$000)</th> </tr> </thead> <tbody> <tr> <td>Project Development</td> <td>\$ 3,185</td> </tr> <tr> <td>Wind Turbines</td> <td>\$ 83,750</td> </tr> <tr> <td>Balance of Plant</td> <td>\$ 12,350</td> </tr> <tr> <td>Other Costs</td> <td>\$ 1,000</td> </tr> <tr> <td>Total Investment</td> <td>\$ 100,285</td> </tr> </tbody> </table>					Amount (\$000)	Project Development	\$ 3,185	Wind Turbines	\$ 83,750	Balance of Plant	\$ 12,350	Other Costs	\$ 1,000	Total Investment	\$ 100,285	Percent Debt 30.0% Interest Rate on Debt 8.0% Term of Debt, years 10 Discount Rate for NPV 6.0% GNP Escalation Rate 2.4%			
	Amount (\$000)																		
Project Development	\$ 3,185																		
Wind Turbines	\$ 83,750																		
Balance of Plant	\$ 12,350																		
Other Costs	\$ 1,000																		
Total Investment	\$ 100,285																		

Project Schedule

The first section at the top left of Table 1 is the Project Schedule, where the user specifies the start of the project (Financial Closing Date), the duration of the installation (Construction Term), and the Project Life. In addition, in the section the user can segment the project life into multiple terms, specifically for PPA or different revenue pricing.

Gross Wind Farm Capacity and Generation

The next section offers entries for the rating of the Wind turbines to be installed, the number of turbines, and the Net Wind Farm Capacity. The Net Energy Delivered is calculated and shown below the entries.

Investment Costs

Next, the Investment Costs offer entries in (\$000) for Project Development, Wind Turbines, Balance of Plant, and Other Costs. The sum of these entries is shown below the green cells.

Revenues and Expenses

The top-right section contains the inputs for revenues and costs. As this sheet is for a quick analysis, there is only one energy price that can be escalated separately from the expenses. Note this escalation rate, like most on Table 1, are additive to the GNP rate. Next, there is an entry for any Renewable Energy Credits (RECs), and also the duration in years for the RECs.

Below the RECs is a Check box to include Production Tax Credits (PTC). The PTC value is automatically defined per current legislation. Each year CEI will update the current year value to be used, as well as the escalation.

Next, there are three options for operating expenses. The first two options are expenses on a Per Turbine basis, and the third option is an annual amount. All three entries are user-defined. The last operating expense is the Land Lease, which can be entered as a percent of Sales or a dollar per MWH.

Project Finance

Keeping the financing options simple, the entries are straight forward.

Saving EconExpert-WIND Spreadsheets

Saving *Fully Functional* Copies of the Model

During the term of your license you may save and reuse installed copies of fully functioning EconExpert-WIND models as you would save any other Excel Spreadsheet. To do so, simply use the Excel Save or Save As selections on the *Excel Command Menu*. *The Spreadsheets you save will only work on computers that have authorized installations of EconExpert-WIND.* If a saved copy of EconExpert-WIND is provided to other parties who do not have a valid license, they will be prompted to contact CEI to obtain License Codes to enable the model. By entering these codes, the models you send them can be fully enabled, and users who receive and license EconExpert-WIND from files shared by others will experience the same full functionality of the model as you will. Without the appropriate codes, transferred copies of the model will not function properly unless they are converted to a *Values-Only* using the EconExpert-WIND Command Menu. *Values-Only* copies will function on any computer, but are limited to providing the results for the individual case studied when the model was converted.

NOTE The copyright provisions of your license expressly prohibit you from providing your original Installation Copy of EconExpert-WIND to others. Your name and license number are stamped on the model. It is also important to note that when you perform a Save, EconExpert-WIND will be temporarily disabled showing **Div!/0** results throughout the various tables. The Input Sheet Titles will also disappear. This is normal behavior that is caused by a Security Feature in EconExpert-WIND that is intended to prevent use of the model by unauthorized persons. During your license period, if you always select the Enable Macros option when you open EconExpert-WIND, you will always be able to clear this Div!/0 result by selecting ENABLE MODEL from the EconExpert-WIND Command Menu. If Macros are NOT enabled, you will not be able to remove the Div!/0 result.

After saving the model, to eliminate the **Div!/0s** and re-enable the model select **ENABLE MODEL > Enable [Filename]** from the Command Menu. If multiple copies of EconExpert-WIND are opened, the menu will apply to the most recent version for which it was refreshed. If you have multiple instances of the model opened, the menu can be synchronized with the active version by selecting the Refresh Menu button that appears at the top of each sheet.

Creating a *Values-Only* Copy of the EconExpert-WIND model

From the UTILITIES MENU or EconExpert Help Menu, you can create a *Values-Only* copy of the current EconExpert-WIND model to archive or for sharing with others who may not be licensed to use EconExpert-WIND. The *Values-Only* copy that this module creates will work on any computer but will have limited functionality. No special license codes will be required to view the *Values-Only* copy on any PC but the *Values-Only* model will not be capable of performing any new calculations.

Since the Sensitivity Cases included with a *Values Only Copy* cannot be updated after the model is converted, you will be offered the option to run all of the Sensitivity Cases and Tornado Diagrams prior to the conversion. If you decline this option, the Tables on the Sensitivity Sheet, Tornado Diagrams and Sensitivity Graphs will be deleted to ensure that the *Values-Only* copy does not contain Sensitivity Cases that are inconsistent with the case provided. Depending on the speed of your computer, running all of the Sensitivity Cases as a batch should take between 1 and 3 minutes.

Prior to executing a *Values-Only* conversion, you will be prompted with a number of warnings, advising you to save the results before making the conversion, and to save the *Values-Only* file to a new name. These warnings are to ensure that you don't accidentally overwrite your original copy of the *Fully Functioning* model.

If desired, you can archive a *Values-Only* copy of the model that can be restored by a licensed user to a full working version of the model. To restore a full working version from a *Recoverable Values-Only* copy, use the Import option on the UTILITIES MENU.

Please be aware that under the terms of the Software License Agreement, all printed reports and copies of EconExpert-WIND must contain the original copyright notices.

Sensitivity Analyses

NOTE In more recent versions of EconExpert-WIND, single case sensitivity graphs are included in a separate add-in module. .

EconExpert-WIND is equipped with the capability to run automated sensitivity analyses on a variety of important project parameters. Parameters for which Sensitivity Analyses can be performed include:

- Capital Investment
- Electric Energy Sales
 - 8760 Hour Average (includes all periods listed below)
 - PPA 1
 - PPA 2
 - PPA 3
- Financing
 - Equity Percentage During Operations
 - Interest Rate During Construction
 - Interest Rate on Senior Debt
 - Interest Rate on Subordinated Debt
 - Term of Senior Debt
 - Term of Subordinated Debt
- Fixed O&M Expenses
 - All Fixed O&M Costs, including those listed below:
 - User Defined Category 1
 - User Defined Category 2
 - Additional Fixed O&M
- Wind Farm Operations and Operating Cost Sensitivities
 - Wind Rating Profile
 - Energy Production and Wind Farm Capacity Factor
 - Fixed Operations and Maintenance Expenses
 - Land Lease and Developer Royalty Payments
 - User Defined Additional Annual Expenses (in Table 1C)
 - Variable Operations and Maintenance Expenses
- Production Tax Credits
 - Annual Amount of Federal PTCs
 - Escalation Rate of Federal PTCs
- Revenue
 - Green Tags / Renewable Energy Credits
 - Additional Annual Revenues (in Table 1 and Table 1C)

The SENSITIVITIES Menu provides you with the ability to run these sensitivity cases either individually, or as a group, and to report how the project's Internal Rate of Return (IRR) will be impacted by variations in these parameters. You can specify the term (in years) of the IRR Analysis that is used in the

Sensitivities by entering the desired number of years in the third column of the IRR Summary Table at the top of Table 1. The location of the entry is identified by the red bold-faced title **TERM USED FOR SENSITIVITY**.

Setting the Term

You can specify the term (in years) of the IRR and NPV Analyses that are used in the Sensitivities by entering the desired number of years in the third column of the NPV and IRR Summary Tables at the top of Table 1. The location of the entry is identified by the red bold-faced title **IRR TERM FOR SENSITIVITY STUDIES** as shown in Figure 19 below:

Figure 33 – Table 1 Wind Global Inputs - The IRR Sensitivity Term

After-Tax IRR End-of-Year		TERM USED FOR SENSITIVITIES		
	Years	6	10	20
	Leveraged	6.18%	12.59%	15.94%
	Unleveraged	1.82%	9.94%	12.83%

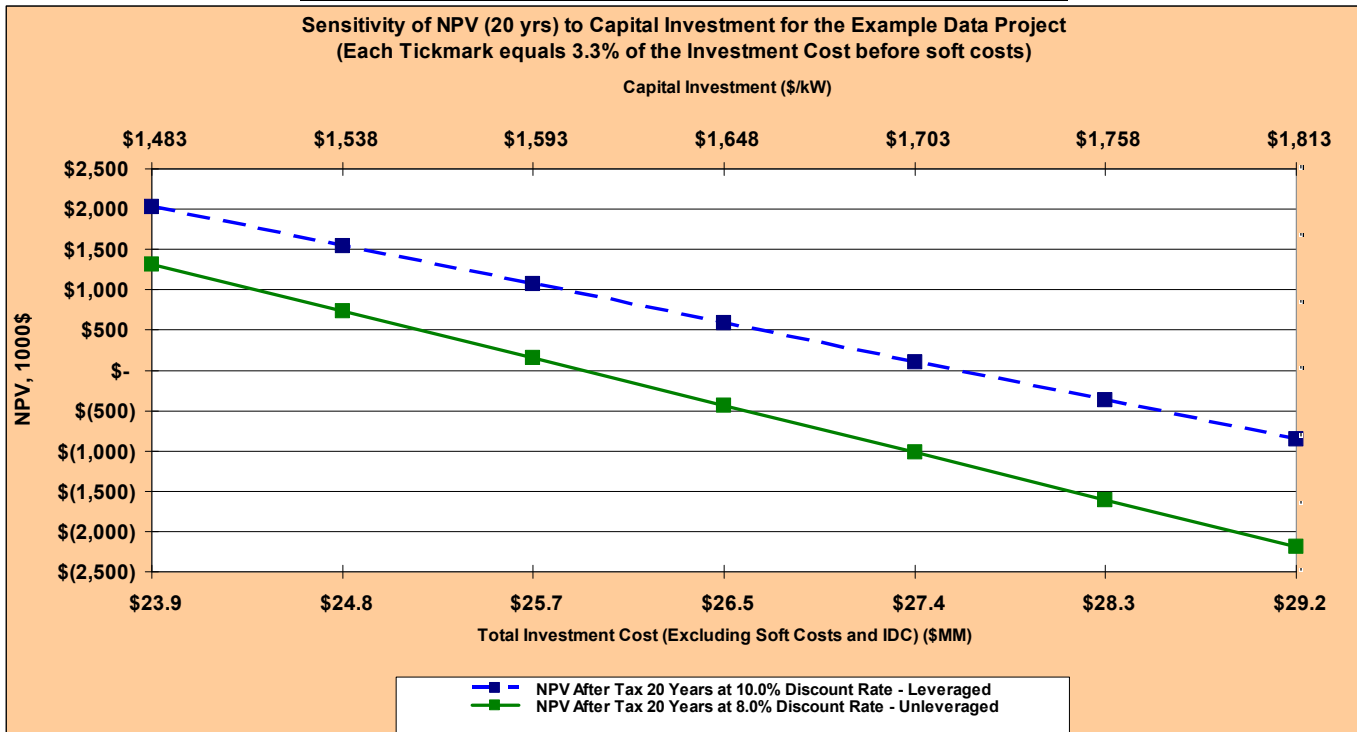
Sensitivity Increments

Sensitivity Analyses in EconExpert-WIND are executed by incrementing the selected variable over a range of values that can be defined by the user. The Sensitivity Increment is used to define the range, by iterating the model over 7 intervals, from the base case value minus three times the Increment to the base case value plus three times the Increment. When you run a Sensitivity Analysis, you will be prompted to enter the respective Increment to be used. If you run all of the Sensitivities as a batch, you will be advised of the current values and asked if you want to use them or change them manually in the Sensitivity Sheet.

So, for example, when performing a Sensitivity Analysis on the Capital Investment Cost of the project, the user might specify a Sensitivity Increment of 5%. EconExpert will then iterate the model using values of 85%, 90%, 95%, 100%, 105%, 110% and 115% of the Capital Cost used for the current case, and will then report in tabular and graphic format how the project's IRR will vary as a function of the resulting changes in the Total Investment Cost (including Development Costs, Capital Costs, Soft Costs and Interest During Construction). The Sensitivity Increment can also be specified in a cell in the Capital Cost Sensitivity Table.

After executing a Sensitivity Analysis, the user will be taken to the resulting graph that illustrates how the project IRR is impacted by changes in the selected variable. A sample of that graph is shown on the next page.

Figure 34 - Graphs Produced from Sensitivity Analyses



IMPORTANT Sensitivity analyses are performed for a specific case in the model, showing upside and downside variations relative to the current case. If Inputs to Table 1 or Table 1C are changed, the current sensitivity cases may need to be updated to reflect the new case.

IMPORTANT The formatting of charts (or graphs) in Excel may require adjustments as the values that are charted are changed. You may also want to customize a chart. To modify or customize a chart created by EconExpert-WIND, first *Disable Range Protection* using the UTILITIES Menu. Then click on the appropriate Chart to view / edit the Excel Chart Options. After finishing it is recommended that you re-enable the Range Protection. For Help on formatting Excel Charts, use Microsoft Excel Help and search for *charts*.

Tornado Diagrams

The SENSITIVITIES menu also provides you with options to generate Tornado Diagrams. While the individual Sensitivities on this menu allow you to selectively study effects of changes individual inputs, Tornado Diagrams illustrate how the NPV or IRR of the current case will be impacted by individually incrementing multiple inputs. Each of the respective Tornado Diagrams is generated by varying the inputs for the life of the project, based on inputs to either Table 1 or Table 1C.

The Sensitivity Sheet is used to generate the tables used for the Tornado Diagrams. The Increments used for the Tornado Diagrams are entered in the Data Input Sheet that is opened when you select the respective Tornado Diagram from the SENSITIVITIES Menu. An example of the Data Input Sheet that will be opened is provided below.

Figure 35 - Tornado Diagrams Data Input Sheet

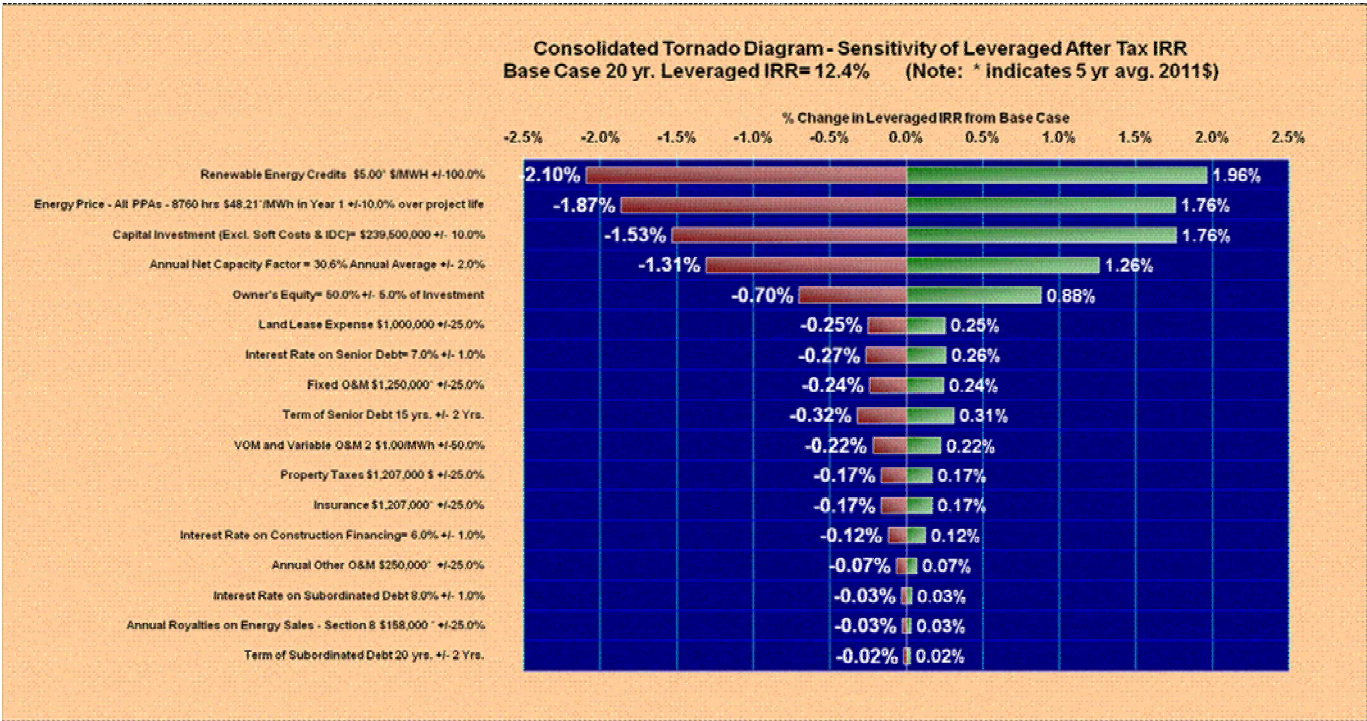
Tornado Diagrams ©Copyright 2005 - 2011 CEI Inc. All Rights Reserved

Equity and Financing	Current Value *	+/-	Capital Investment, Capacity Factor and Fixed Operating	Current Value *	+/-	Revenues	Current Value *	+/-
Change in Owner's Equity, % of Total Investment 1000	50.0%	1 %	Capital Investment, % of Capital 1000\$	\$239,500	10 %	Energy Prices PPA - 1 First Term, \$/MWH	\$45.00/MWH	15 %
Interest Rate on Senior Construction Financing, %	6.0%	1 "	Net Capacity Factor, % of Annual MWH	30.6%	1 "	Energy Prices - PPA - 2 Second Term, \$/MWH	\$0.00/MWH	15 "
Interest Rate on Senior / Primary Debt, %	7.0%	1 "	All Fixed O&M Costs, % of Costs 1000\$	\$1,250/yr	25	Energy Prices PPA - 3 Third Term, \$/MWH	\$0.00/MWH	15
Term of Senior / Primary Debt, Years	15 years	1 yr	All Other O&M Costs, % of Costs 1000\$	\$250/yr	25	Energy Prices All PPAs (8760 hrs. - % of Annual Average -	All Periods	15
Interest Rate on Subordinated Debt, %	8.0%	1 %	Developers Royalties, % of Costs 1000\$	\$158/yr	25	Production Tax Credits, \$/MWH	/MWH	10
Term of Subordinated Debt, Years	20 years	1 yr	Land Lease, % of Costs 1000\$	\$0/yr	25	Escalation Rate of Production Tax Credits, % / yr	2.5%	0.3
			Property Taxes, % of Costs 1000\$	\$1,207/yr	25	Renewable Energy Credits, \$/MWH	\$5.00/MWH	100
Variable Operating Costs			Insurance, % of Costs 1000\$	\$1,207/yr	25	Add'l Revenues 1, \$000/yr	N/A	10
Global Inputs Variable O&M User Defined 1	\$1.00/MWH	25 %	Add'l Expenses 1, \$000/yr	N/A	10	Add'l Revenues 2, \$000/yr	N/A	10
			Add'l Expenses 2, \$000/yr	N/A	10	Add'l Revenues 3, \$000/yr	N/A	10
			Add'l Expenses 3, \$000/yr	N/A	10	Add'l Revenues 4, \$000/yr	N/A	10

* Note: Current Values are "Representative Amounts" for each variable for information purposes only. For variables with widely varying annual amounts, the Current Value may differ from expectations. In all cases, the sensitivities will be performed by varying the actual annual amounts in the model by the indicated +/- variation, independent of what representative Current Value is displayed.

The white boxes in this sheet are the locations where you tell EconExpert-WIND over what +/- range ("Increment") that you would like the model to vary each of the specified inputs. Once you have established the Increments, select either the IRR or NPV buttons to generate the selected Tornado Diagram. After selecting this button, the following diagram will be generated:

Figure 36 - Example Tornado Diagram



The horizontal bars illustrate how +/- changes in the identified inputs would impact the project's IRR. The results are sorted in order of significance, giving the *tornado* effect. Note that the titles on the left axis identify the base case leveraged and unleveraged IRRs, the base year \$ value for the input, and the Increment that was used.

Customizing EconExpert-WIND

One of the many advantages of EconExpert-WIND is the flexibility it offers allowing you to accurately custom model virtually any power generation project. While the core tables in the model are locked and cannot be modified by the user, in the vast majority of cases, custom analysis can be accomplished using a combination of EconExpert-WIND's Global and Annual Inputs Sheets, Tables 1 and 1C. In addition to entering values into these cells, formulas may also be entered. These formulas can be tied to other cells in the model or to custom tables that you develop. Useful approaches for customizing the model include:

Free-Form Sections

At the bottom of each sheet, a blank unprotected area (formatted as Yellow Cells), is provided where you can develop your own custom calculations. In these areas you can set up your own tables, which can be linked to other tables and calculations in the model.

Figure 37 - Example of Areas as the Bottom of Each Sheet for Custom Calculations

You May Use the Outlined Section Below for Calculations and Customization									

You can select the format of cells in these tables using the *UTILITIES>Reformat Cells* option on the EconExpert-WIND Command Menu, which allows you to select various number, \$ or percentage formats.

New Sheets

You can also insert a new sheet into the model. To do this, right click on any of the Sheet Tabs and select *Insert Worksheet* from the Excel *right-click* menu.

To take best advantage of customization, link your custom formulas to Annual Inputs in Table 1C. Utilize the User-Defined Input Options for Revenues and Expenses. In this way, all of the functionality of the model will reflect your customization.

NOTE Be careful not to create 'Circular Calculations' using these approaches.
--

CEI also provides financial modeling and model customization services. For information please contact us at the address shown on the cover page of this manual.

Appendices

Overview of CEI's *EconExpert*TM Software Suite

Competitive Energy Insight (CEI), established in 1997, has developed a suite of mature and highly advanced software products for the analysis of investments in renewable energy, central power stations, commodity liquid and gaseous products, and combined heat and power. We both license these models for your direct use, and use them broadly in our project development consulting practice serving as a bench to support your in-house team. All of the EconExpert tools are Excel-based, making them completely customizable, auditable and adding all of the features of Excel to EconExpert's powerful features and architecture. Importantly, the EconExpert Models are far more than spreadsheets. Behind each model is powerful Visual Basic programming that provides highly advanced menu/wizard driven functionality taking Excel and your analysis capability to a completely new level. Standardized, accurate and applicable from simple screening to bank quality/investment grade analysis of virtually any project investment, acquisition or divestiture, EconExpert has been applied to literally billions of dollars of energy project investments including on-site generation applications, renewable energy projects and large multi-hundred million dollar central power station investments. For more information on CEI please visit <http://www.CEInsight.com> where you can view flash demos of our software.

CEI's financial analysis suite includes the following:

EconExpert-Partnerships and LeasesTM for evaluation of Tax Equity Partnerships and certain Leasing Structures, based on projects analyzed in your own in-house custom models or with any of the EconExpert Project Financial Models described below.

EconExpert-WINDTM for *Wind Farm* projects that sell wholesale energy.

EconExpert-EPTM for wholesale *Electric Power* including solar thermal, biofuel, landfill gas, fossil and other thermal-based electric power projects.

EconExpert-NuclearTM for wholesale *Nuclear Based Electric Power*.

EconExpert-PV for wholesale / large solar *Photovoltaic* projects.

EconExpert-DGTM, **EconExpert-DG for PV or Wind**TM and **EconExpert-DG for Solar Thermal**TM are for *Distributed Generation / Behind-the-Meter* applications, utility tariff analysis and energy savings applications.

EconExpert-CPTM for *Commodity Products* including ethanol, biodiesel, synthetic natural gas, refining and coal gasification / liquefaction applications.

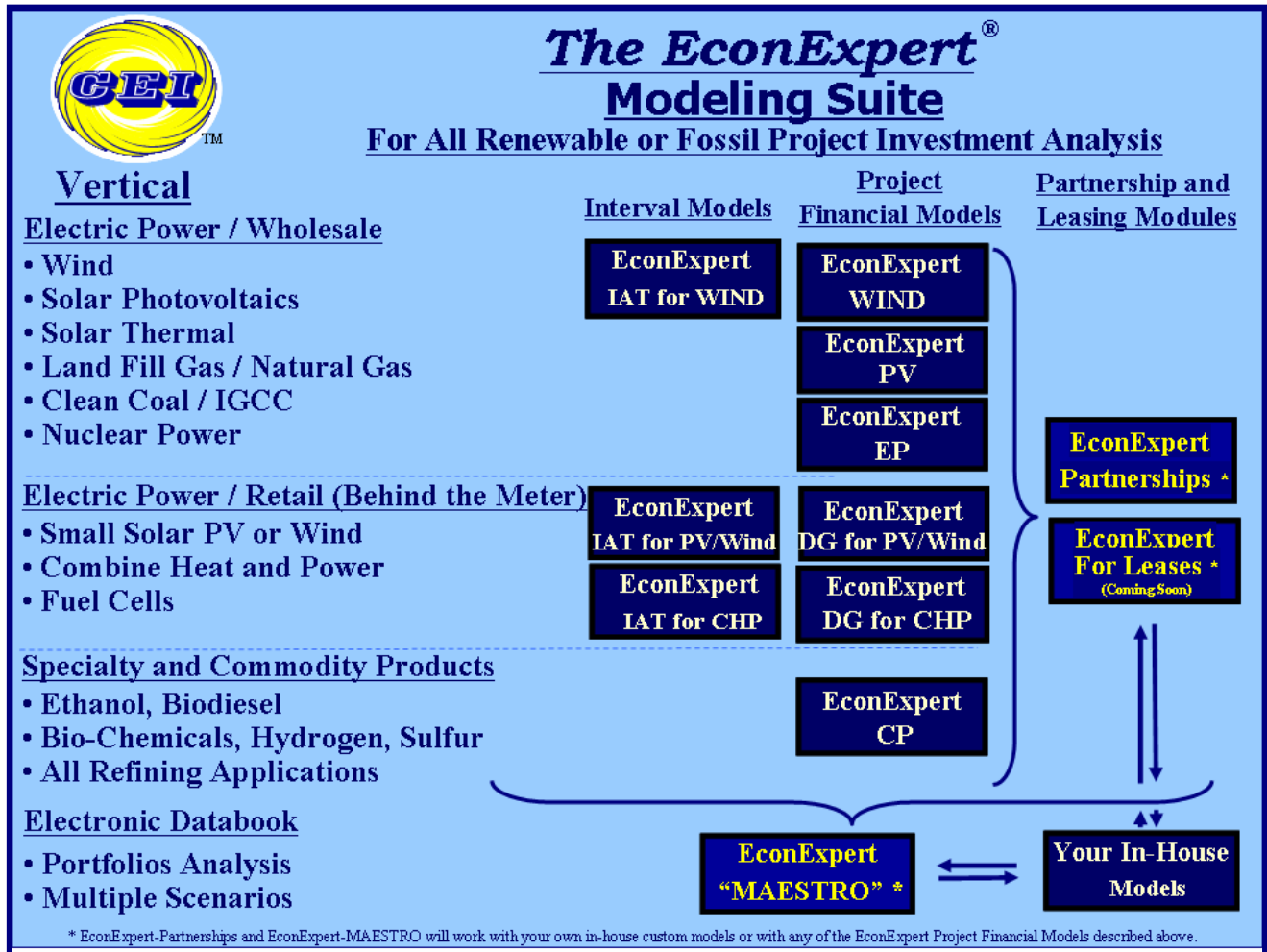
EconExpert-IATTM, **EconExpert-IAT for PV**TM and **EconExpert-IAT for WIND**TM for *Interval Analysis* of Combined Heat and Power, Photovoltaics and Wind projects. Simulate time-of-production analysis of energy sales as a function of interval energy prices, demand/load profiles, hourly ambient weather conditions and facility operating characteristics.

EconExpert-“MAESTRO”TM an Electronic Databook for integrated analysis of multiple scenarios or projects *based in your own custom models or in EconExpert Models*. With this tool users can perform tasks like consolidation of multiple projects into “portfolio analysis” providing consolidated expense, debt, revenue and book and cash financial statements, and develop comparisons of complex and distinct

scenarios, contracting analysis and risk analysis integrating one or more of the EconExpert models described above. For the calendar year 2010, CEI is providing the MAESTRO Databook for free with any subscription for 2 or more of the EconExpert models above.

* Most features of the *EconExpert-Partnerships* and *EconExpert-MAESTRO* will work with your own in-house custom models or with any of the EconExpert Project Financial Models described above.

The following is a schematic of the software suite:



EconExpert-WIND Software License***IMPORTANT - PLEASE READ THE TERMS OF YOUR SOFTWARE LICENSE***

*			
-			
<u>Today's Date</u>	September 29, 2010		
<u>License Period</u>	August 10, 2010	Until	June 15, 2011
<u>The EconExpert-WIND Financial Model by</u> <u>Competitive Energy Insight, Inc.</u> <u>SOFTWARE LICENSE AGREEMENT</u>			

Read Carefully Before Using This Software.

Before the installation of this software can be completed, you must accept the terms of the License Agreement (the "Agreement") below by clicking on the

"I HAVE READ AND ACCEPT..." button at the end of this Agreement.

If you do not accept the License Agreement terms, you are not authorized to use the EconExpert Model.

This is a legal agreement between you (the "Licensee") (either an individual or an entity as the original purchaser) and CEI. By pressing the ACCEPT button below, you agree to be bound by the terms of this Agreement. If you can not agree to the terms of this Agreement, please press the DECLINE button below and destroy the software, and all accompanying items (including printed materials and packaging if applicable).

1. Description of the Model. The EconExpert-WIND Financial Model ("EconExpert" or the "Model") is a spreadsheet designed to assist users with the financial analysis of wind Project electric power generation projects. The Model requires the installation and use of Microsoft Excel®, for which Licensee must possess a valid license. Licensee, and Licensee's authorized users of the Model, must use software and hardware that satisfy the minimum requirements specified in the Model's User's Manual.

2. License Rights. This Agreement provides Licensee and its Authorized Users with a limited, nonexclusive, nontransferable, license right to install and to use the Model on specific desktop and laptop computers ("Authorized Computers"). The number of specific Authorized Computers must be authorized in writing, fax or email by CEI, usually by invoice and associated receipt of payment from Licensee. Neither Licensee nor its Authorized Users may sublicense, assign, or transfer the license granted hereunder to any third party, and any attempt at any such sublicense, assignment, or transfer is void. Licensee and its Authorized Users may not copy, distribute, modify, reverse engineer or create Derivative Works (as hereinafter defined) except as expressly authorized by this Agreement and the Model. Authorized Users are authorized to use the Model only on the computers specified in writing, fax or email by CEI, and the list of such computers shall only be modified with documented approval by CEI which may be by written agreement, fax or email.

3. Termination. In the event of a breach of this Agreement by Licensee, CEI may terminate this Agreement. Upon termination or expiration of the term of this Agreement, Licensee's and Authorized Users' license to the Model shall terminate. At the end of the term of this license, or upon its earlier termination, unless this Agreement is extended by a written, faxed or emailed notice provided by CEI, Licensee shall destroy all electronic copies of the Model.

Licensee, for itself, for its Parents, for its Affiliates and for its Subsidiaries (Licensee and/or Affiliates) hereby agrees and stipulates that in the event that Licensee and/or Affiliates shall violate the terms of the Agreement, Licensee and/or Affiliates shall be jointly and severally be liable to CEI and CEI shall be entitled to damages and any and all equitable relief available to it at law or equity. Licensee, for itself, and for Licensee and/or Affiliates hereby agrees and stipulates that in the event of a violation of the Agreement, CEI shall be entitled to receive appropriate restraining orders and injunctions restraining and enjoining Licensee and/or Affiliates from any and all acts in violation of the Agreement as well as any damages that may be suffered by CEI as a result of any such violation.

4. License Fees and Term: Fees for use of, and the term of license of, the Model are on a periodic subscription basis. The fees payable under this Agreement have been set forth in a separate written, faxed or emailed communication between CEI and Licensee, usually by Invoice.

5. Warranty. CEI makes no warranties or representations with respect to the accuracy, use or application of the Model, nor any technical assistance provided by CEI to Licensee or Authorized Users, except that CEI will make reasonable efforts to correct defects in the Model after they are identified and will promptly provide Licensee with updates containing such corrections as CEI deems appropriate when they are available. These reasonable efforts to correct defects in the Model do not apply to Derivative Works developed by Users of the Model and CEI assumes no responsibility for or obligation relative to the performance of or defects in Microsoft Excel. EXCEPT FOR THE WARRANTIES AND REPRESENTATIONS EXPRESSLY SET FORTH HEREIN, COMPETITIVE ENERGY INSIGHT, INC. DISCLAIMS ANY AND ALL WARRANTIES AND REPRESENTATIONS, EXPRESS OR IMPLIED, WITH RESPECT TO THE MODEL AND ITS CONFORMITY TO ANY SPECIFICATIONS OR DESCRIPTION, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR THAT THE MODEL OR THE RESULTS THEREFROM SHALL BE ERROR FREE.

CHECK YOUR WORK, THE RESULTS GENERATED BY THIS MODEL ARE YOUR RESPONSIBILITY.

6. Technical Assistance. Licensee and its Authorized Users shall be entitled to 30-days of free technical assistance applied only to the installation and use of the Models, which will be provided via phone, Internet or e-mail during the first 30 days of an initial subscription period. Technical assistance beyond this 30-day period, or any on-site technical assistance, shall be provided at the discretion of CEI and may be billed to client at CEI's then-current consulting rates for technical assistance.

7. Installation of the Model. The electronic software provided by CEI under this Agreement will be subject to a limited installation period, after which the software provided may not install properly on the User's Computer(s). If appropriate, CEI can provide replacement electronic copies of the software during the period of this Agreement with a new authorized period of installation.

8. Inputs, Examples and Derivative Works. The Model includes sections that have been designated as "Unprotected" where Authorized Users may input data or may perform custom analyses using the results generated within the Model, both of which analyses and generated results are defined as and described in this Agreement as "Derivative Works." Users may only make changes to the Model in such designated "Unprotected" areas, or by inserting worksheets in the model, and such changes are only for the use of Licensees and Authorized Users of the Model. CEI provides no warranties relative to such Derivative Works of the Model or relative to Licensee's or Authorized Users' application of such Derivative Works. Inputs, examples and descriptions provided by CEI in the Model are provided for example purposes only and CEI makes no representations or warranties with respect to the accuracy of such inputs, examples or descriptions.

9. Sharing of Electronic Copies of the Model and Printed Materials Generated by the Model. Electronic copies of the Model and printed materials generated by the Model may be generated and shared with third parties ONLY as specified below: All Electronic Copies of the Model and Printed Materials must include the original Copyright notices provided by CEI.

9.1 Saving of Electronic Copies of the Model. Users may make, save and reuse electronic copies of the Model, as required, for use on the Authorized Computers or as otherwise designated in writing by CEI.

9.2 Sharing of fully functional Electronic Copies of the Model. Users may share electronic copies of the Model with others including third parties who have a current and valid License with CEI for the Model, but such Electronic Copies will not work properly on computers that are not Licensed and Authorized by CEI. The shared copies can be made to be Fully Functional on a new user's computer by obtaining the proper License Extension Codes from CEI, which can be provided to new Authorized Licensees as described when the Model is opened on an unauthorized computer, in the EconExpert HELP Menu and in the User's Manual.

9.3 Sharing of Electronic (Values Only) Copies of the Model. The Model includes preprogrammed algorithms accessible through the Model's Command Menu that will generate electronic copies of the Model which contain only the values generated by a specific case and contain no formulas capable of analyzing other cases with the Model. Users may share with third parties such "Values Only" copies of the Model that have been generated using macros that are accessed by the Model's Command Menu. All such electronic copies shall include the EconExpert Trademark and copyright notices as provided by CEI in the Model.

9.4 Sharing of Printed Reports Generated by the Model. The Model includes preprogrammed algorithms accessible through the Model's Command Menu that will generate printed copies of reports which contain only the values generated by a specific case and contain no formulas capable of analyzing other cases with the Model. Users may share with third parties such printed "Values Only" copies of the Model that have been generated using macros that are accessed by the Model's Command Menu. No other form of printed copies may be shared with third parties who do not have a current and valid license to the Model. All such printed copies shall include the EconExpert trademark and copyright notices as provided by CEI in the Model and on all reports generated using the Model.

10. Limitation of Liability. In no event shall Competitive Energy Insight, Inc., its owners, employees, affiliates, representatives, or assigns, be liable for indirect, incidental, consequential, special, or punitive damages, or for loss of profits or sales in connection with the use of the Model. In addition, CEI's total aggregate liability to Licensee under this Agreement shall not exceed the amount of the current annual subscription fee for one user, that was most recently paid by Licensee. This limitation of liability shall apply to all claims made by Licensee or its affiliates without regard to which other provisions of this Agreement have been breached or have proved to be ineffective.

11. Copyright Notice: The Model and accompanying documentation are protected by copyright law and international treaties. The Model and accompanying documentation include copyright notices prominently displayed in the Model, on reports generated and produced by the Model, and in the User's Manual. Use of the Model outside of the License term is expressly prohibited. For information regarding the Model please contact:

Competitive Energy Insight, Inc.
12025 Blue Diamond Court
San Diego, CA 92131

Telephone: (858) 566 - 0221
Fax: (858) 566 - 0287

Email: Info@CEInsight.com
Website: <http://www.CEInsight.com>

The EconExpert User's Manual can be downloaded for free from the Website.

12. Jurisdiction: This Agreement shall be governed by and interpreted in accordance with the laws of the State of California, without reference to its rules on conflicts of laws. The sole jurisdiction and venue for any litigation arising out of this Agreement shall be an appropriate federal or state court in California, San Diego County.

13. Entire Agreement. This Agreement and any other addenda hereto that have been signed by CEI and Licensee contain the entire Agreement between the parties hereto with respect to the subject matter hereof and supersede any and all prior understandings, correspondence and Agreements, oral or written, between the parties with respect thereto. No change, amendment or modification of this Agreement shall be valid or binding upon the parties unless such change, amendment or modification shall be in writing and duly executed by both parties.

14. Survival. In the event of termination or expiration of this Agreement, the obligations of Sections 3 ("Termination"), 5 ("Warranty"), 10 ("Limitation of Liability"), 11 ("Copyright Notice"), 12 ("Jurisdiction"), 15 ("Indemnification"), and 16 ("Attorneys Fees") shall survive such termination or expiration.

15. Indemnification. Licensee shall indemnify, defend, and hold CEI harmless from any and all third party claims, demands, suits, and actions alleging injury to persons, damage to property, or other loss or liability resulting from Licensee's use of the Model.

16. Attorneys Fees. The prevailing party in any dispute, mediation, arbitration, or litigation concerning this Agreement shall be entitled to receive from the other party its attorneys' fees and costs incurred in connection therewith.

17. Successors and Assigns. Subject to the prohibition on Licensee's assignment, this Agreement and all of the provisions hereof shall be binding upon and inure to the benefit of the parties hereto and their respective successors and permitted assigns.

18. Consult Licensed Council. CEI is neither a licensed legal firm, a certified public accounting firm nor a licensed securities broker dealer. CEI advises all clients to consult licensed legal, tax and financing council in all matters where such council is appropriate or required.

By clicking on the button provided on the bottom of the License Sheet in the EconExpert Financial Model, User ACCEPTS or DECLINES acceptance of the terms of this Software License Agreement. If the License is declined, the EconExpert Model will not be fully installed and should not be used.